graflex®

SERVICE INSTRUCTIONS AND PARTS LIST

xl CAMERA BODY

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PART 1

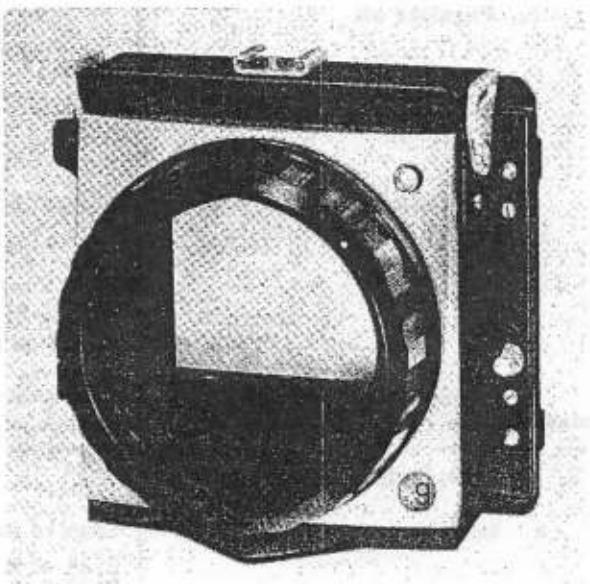
A. INTRODUCTION

This section of the xl Service Parts Manual has been prepared as a guide for service and maintenance of xl Camera Bodies. Obvious procedures are not stated. Models covered in this section include xl Rangefinder Model (body with rangefinder), Model xl Special (body less rangefinder), and Model xlw (model for wide angle lens). The Parts Lists clearly describe the differences among models.

B. DESCRIPTION

The xl Camera System is a 2-1/4 x 2-3/4 format. modular camera. The basic module consists of three major sub-elements; the mounting plate. the focusing mechanism, and the rangefinder. The focusing mechanism and mounting plate are separated by a camera body in Models xl Rangefinder and xl Special. With short focal length lenses. as intended for use with Model xlw, the module is used without the camera body. Models xl Rangefinder and xl Special can be used with xl lenses from 58mm to 180mm. (Longer lenses may be used. but an accessory spacer and special focusing sleeve are required for installation.)

Model xl Rangefinder



Model xl Special

Model xlw

Figure 1-1. xl CAMERA BODIES

C. TROUBLESHOOTING

The purpose of the following tables are to list commonly encountered repairs and adjustments for most rangefinder and body (focusing mechanism and mounting mechanism) failures. Generally, troubles caused by operational error are not listed as it is assumed the repairman is familiar with troubles of this type. Disassemble only as needed for repair. Before disassembly, check for loose or missing screws or parts that are binding because of misalignment or lack of lubrication.

TROUBLE	CAUSE	REMEDY
1. Rangefinder Troubleshooting Table		
a. Double vision	Mirror mount assembly (2, Fig. 2-2) misaligned	Adjust screw (3, Fig. 2-2) as instructed in para. G. 7.
b. Infinity inaccurate	Mirror mount assembly (2, Fig. 2-2) misaligned	Adjust screw (32, Fig. 2-2) as instructed in para. G. 7.
c. Parallax off	Framing crank (3, Fig. 2-6) off stud	Replace on stud
	Mask (7, Fig. 2-6) does not track	Inspect mask for burrs or areas that are binding. Remove burrs and realign areas that are binding.
d. Rangefinder not tracking	Clutch (51, Fig. 2-2) inoperative	Replace clutch assembly, para. G. 6.
	Bent follower arm of clutch (51, Fig. 2-2) - usually caused by inserting lens barrel incorrectly	Straighten arm or replace clutch, para. G. 6.
e. Infinity can be set at any distance.	Interlock of latch assembly (20, Fig. 2-2) slipping	Readjust or replace, para. G. 6.
2. Camera Body Troubleshooting Table		
a. Lens barrel loose	Lugs of focusing ring (2, Fig. 2-3) or (8, Fig. 2-4), or (3, Fig. 2-5) broken	Replace focusing ring para. H. 1.
	Sleeve assembly (5, Fig. 2-8) out of tolerance	Readjust, para. G. 2.
b. Focus off	Focusing ring loose	Tighten screws (3, Fig. 2-3), or (9, Fig. 2-4), or (4, Fig. 2-5)
c. Film back loose	Back lock assembly, (1, Fig. 2-7) broken	Replace, para. G. 1.

D. SPECIAL TOOLS AND FIXTURES

Servicing the camera bodies and rangefinder will be facilitated by tools and fixtures described in this paragraph. Some tools and fixtures may be fabricated according to illustrations provided; some are standard tools. Most tools have been assigned a tool number and are available from Graflex.

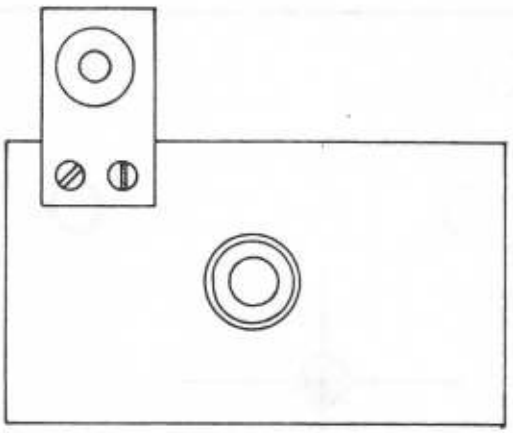


Figure 1-2. FOCUSING PANEL ST- 6640

1. Focusing Panel ST-6640. Used on camera after assembly to check focus between lens cams and the rangefinder.

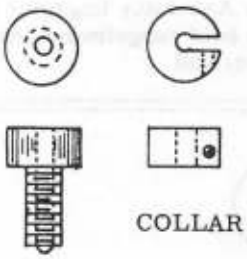
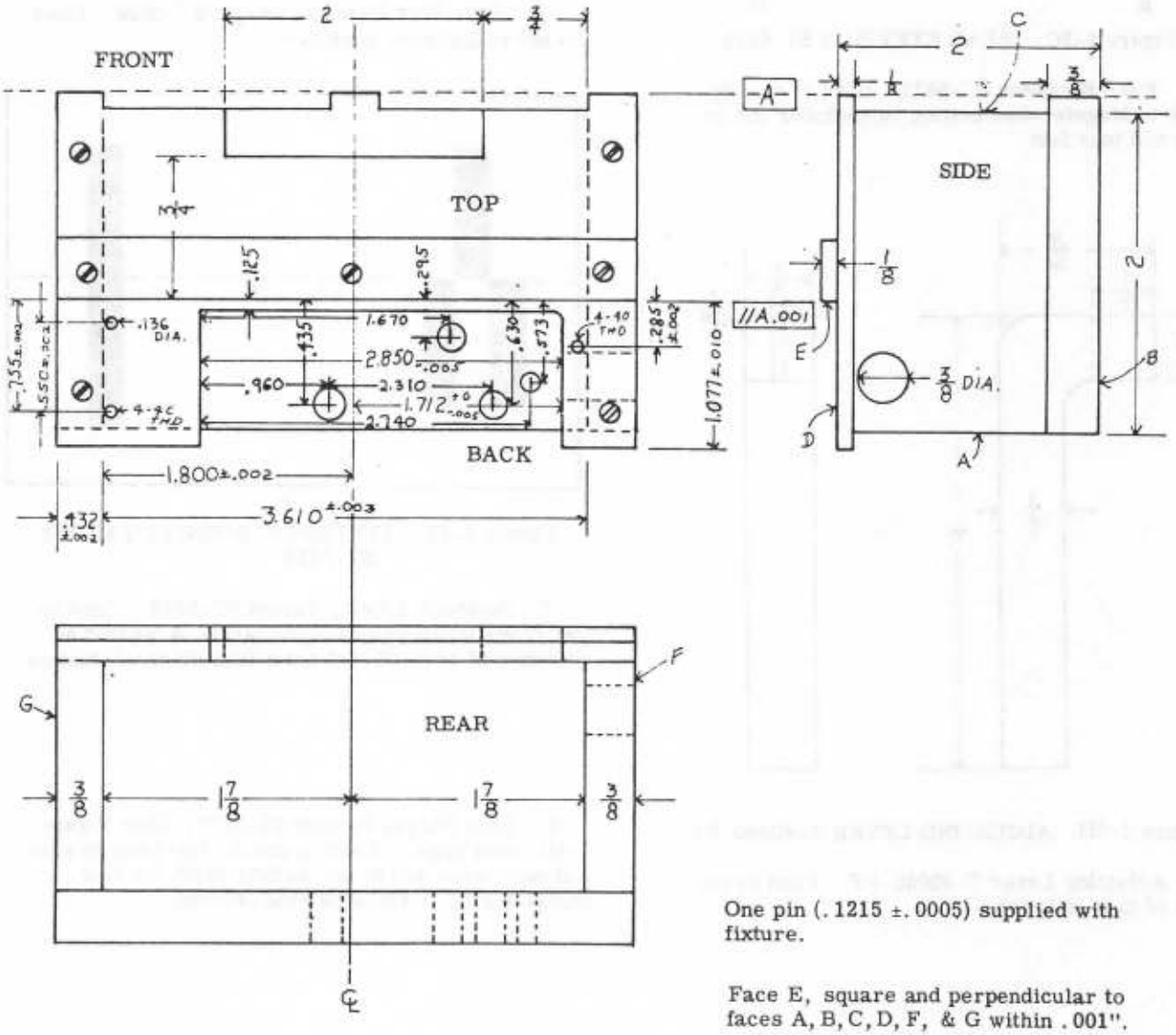


Figure 1-2A. SLEEVE BUSHING AND DEPTH COLLAR (SET) ST-6641

2. Sleeve Bushing and Depth Collar ST-6641. Used for drilling new focusing ring bearings and setting focusing ring at infinity.



One pin (.1215 ±.0005) supplied with fixture.

Face E, square and perpendicular to faces A, B, C, D, F, & G within .001".

Figure 1-2B. RANGEFINDER ASSEMBLY ENGAGING FIXTURE ST-6636

3. Rangefinder Assembly Engaging Fixture ST-6636. Used to hold rangefinder assembly when doing repair or overhaul.

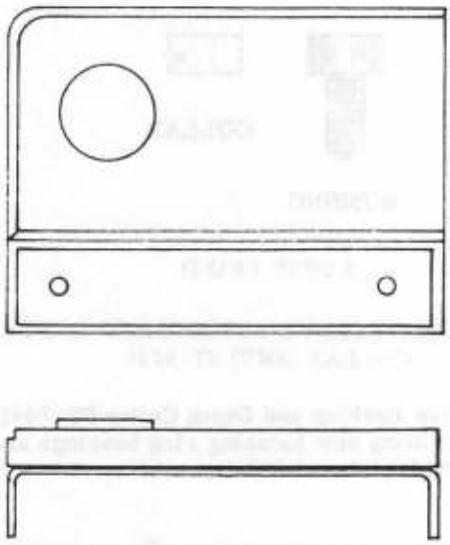


Figure 1-2C. REAR EYEPIECE ST-6635

4. Rear Eyepiece ST-6635. Used to clarify image of targets when setting rangefinder for infinity and four feet.

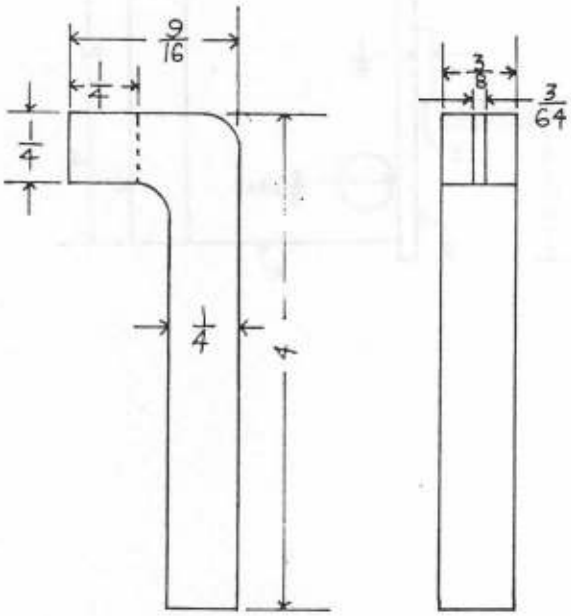


Figure 1-2D. ADJUSTING LEVER T-40080-FF

5. Adjusting Lever T-40080-FF. Used to set height of cam follower.

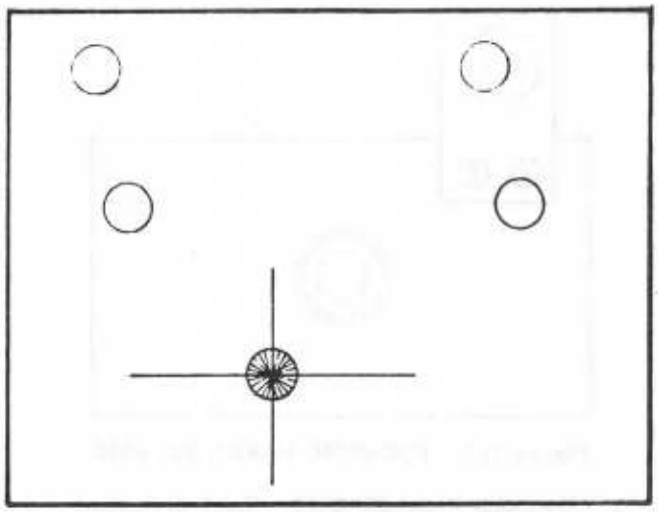


Figure 1-2E. FOUR FOOT PARALLAX TARGET ST-6638

6. Four Foot Parallax Target ST-6638. Used to set rangefinder parallax.

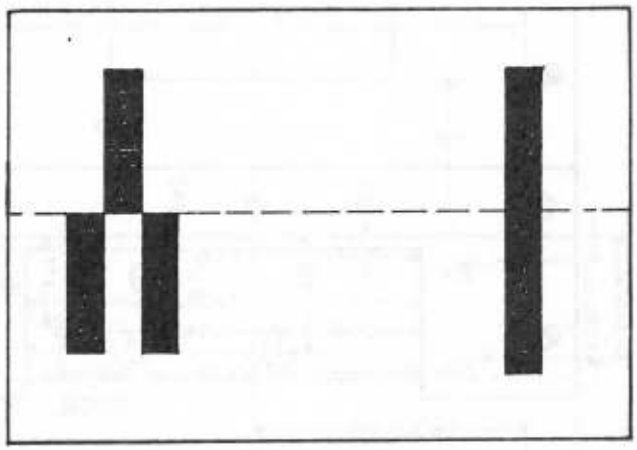


Figure 1-2F. SYNTHETIC INFINITY TARGET ST-6639

7. Synthetic Infinity Target ST-6639. Used to set rangefinder infinity when target is located at distance of 16 to 20 feet from film plane of camera.

8. Lens Barrel Dummy ST-6637. (See Figure 1-2G, next page.) Used to check clearance on cam follower lever and to set infinity depth for new focusing ring or focusing ring bearing.

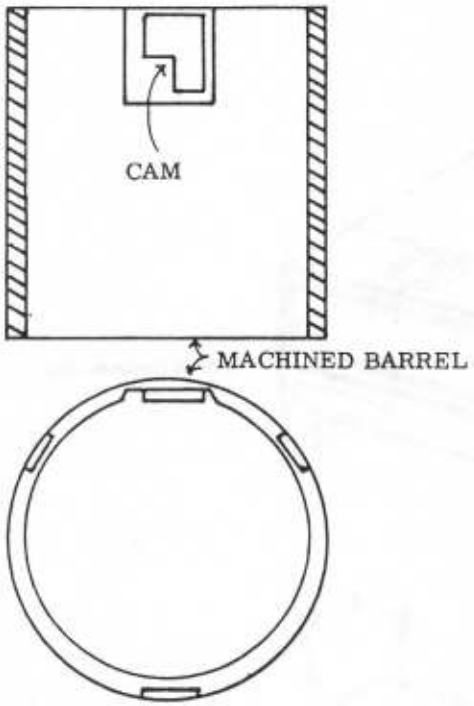
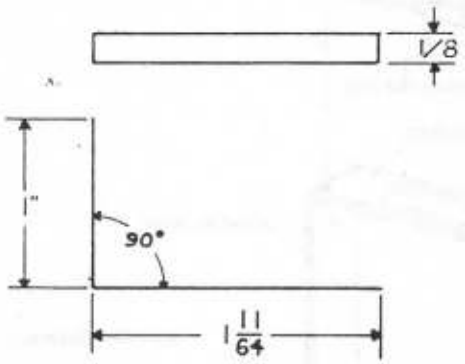


Figure 1-2G. LENS BARREL DUMMY ST-6637

9. Recommended Service Aids (not available from Graflex Inc.)



MATERIAL: BERYLLIUM COPPER, 0.010" THK.

Figure 1-2H. SHAFT HOLDING SPRING

a. Shaft Holding Spring. Used to hold parallax lever assembly shaft during assembly of the rangefinder.

b. Screwdriver with sleeve. Jewelers screwdriver (Starrett Blade C, 0.070) and a sleeve to fit over a No. 2 screw head. Used in adjustment of rangefinder.

c. Surface Plate. Used as a parallel surface to measure tolerances when repairing the camera and rangefinder.

d. Height Gage. Used to measure tolerances when reassembling the camera and rangefinder.

e. Dial Indicator. Used to measure tolerances when reassembling the camera and rangefinder.

f. Gram Gage (150 grams). Used to measure torque on the mirror arm assembly.

E. DISASSEMBLY

1. Rangefinder from Camera Body (Figure 1-3)

a. Remove studs holding brackets and spring washers on each side of camera body.

b. Remove two screws (1).

c. Carefully lift cover subassembly from rangefinder.

d. Remove rear cover by removing three screws (2).

e. Remove four screws (3) securing mounting plate; remove mounting plate.

f. Remove screws (4 & 4a) securing bottom cover; remove bottom cover.

g. From baseplate, remove two screws (5).

h. Carefully slide body and rangefinder subassembly to the rear to separate it from baseplate and support assembly. Be sure the follower arm does not strike any parts when removing this subassembly.

i. Remove two screws (6), with attaching washers, and remove two screws (7), and screws (8).

j. Carefully work rangefinder assembly out of mounting hole in camera body. Do not remove gasket from top of camera body unless gasket is to be replaced.

2. Rangefinder Disassembly (Figure 1-4)

Do not disassemble more than is required for repair or adjustment.

CAUTION

Do not disassemble optical components. These components are bonded with heavy duty optical cement. Any attempt to separate parts will result in damage to lenses or prisms, thus affecting operation of the rangefinder.

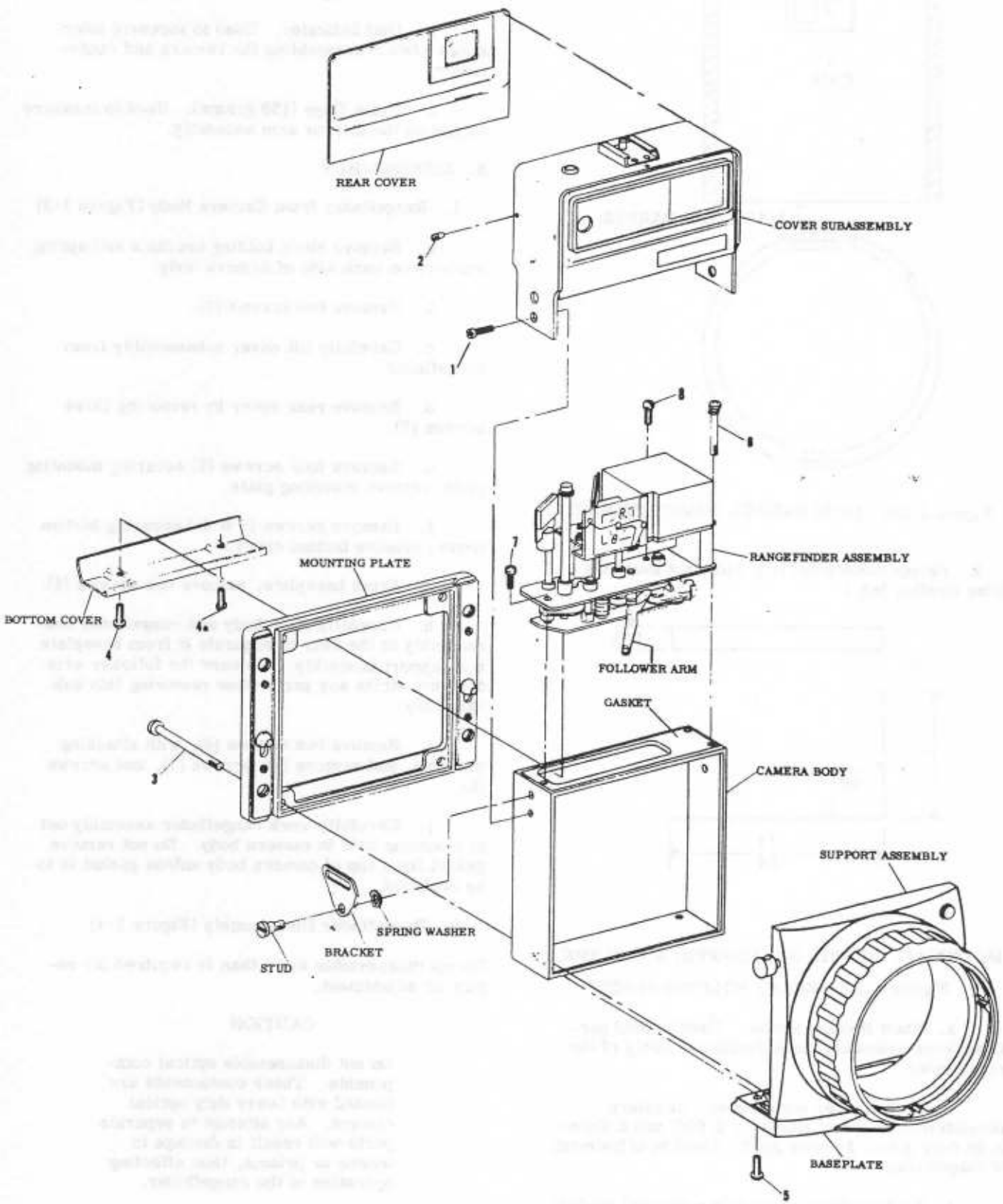


Figure 1-3. REMOVING RANGEFINDER FROM CAMERA BODY

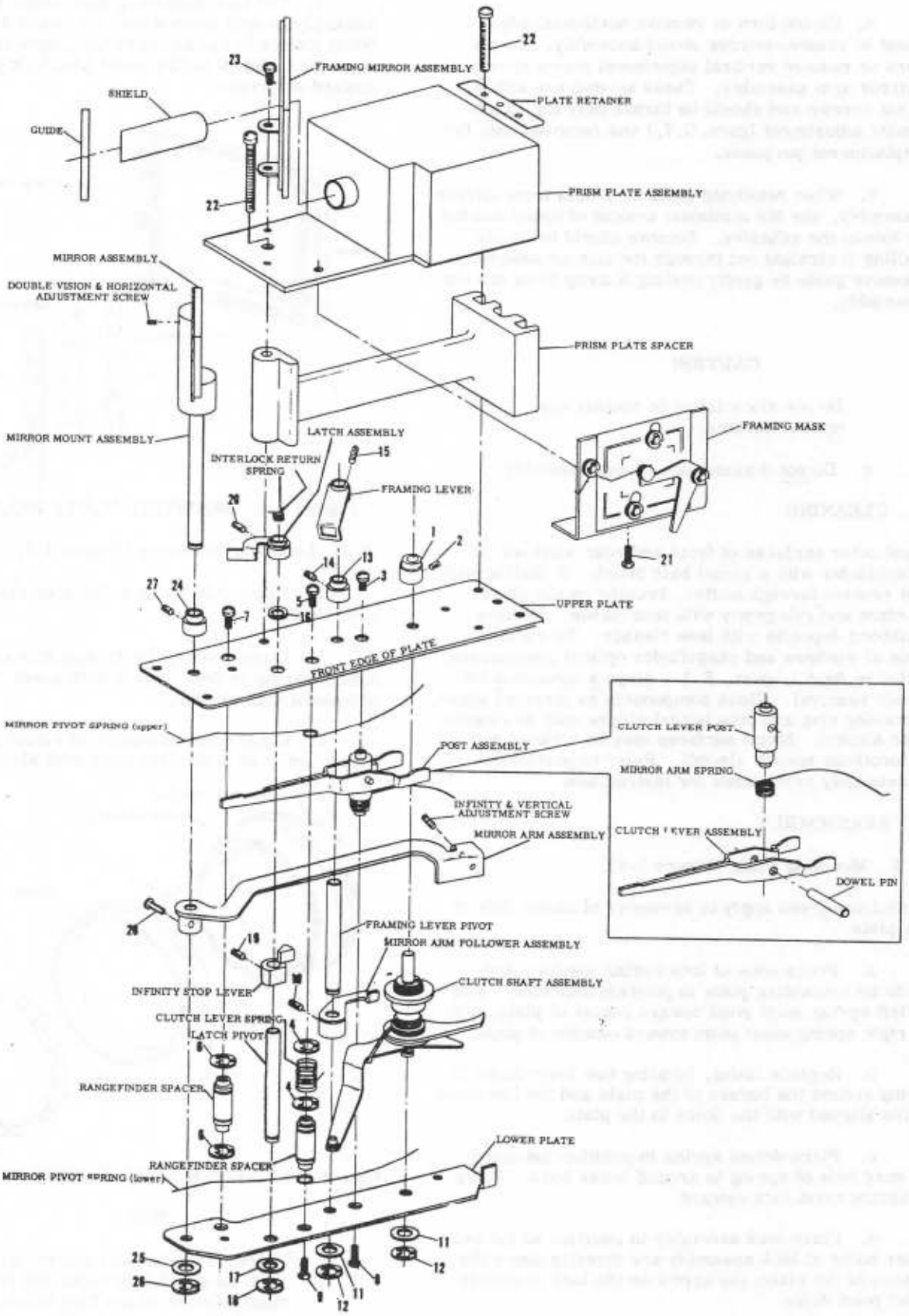


Figure 1-4. RANGEFINDER DISASSEMBLY

a. Do not turn or remove horizontal adjustment to remove mirror mount assembly. Do not turn or remove vertical adjustment screw to remove mirror arm assembly. These screws are adjustment screws and should be turned only for rangefinder adjustment (para. G. 7.) and removed only for replacement purposes.

b. When removing guide or shield from mirror assembly, use the minimum amount of toluol needed to loosen the adhesive. Remove shield by gently pulling it straight out through the mirror assembly. Remove guide by gently peeling it away from mirror assembly.

CAUTION

Do not allow toluol to contact any optical surface.

c. Do not disassemble clutch assembly.

F. CLEANING

Dust outer surfaces of front and rear windows of rangefinder with a camel hair brush. If dusting will not remove foreign matter, breathe on the glass surface and rub gently with lens tissue. Remove stubborn deposits with lens cleaner. To clean inside of windows and rangefinder optical components, refer to Part 1, para. E. 1., steps a through d for cover removal. Clean components as directed above. Focusing ring and lens barrel sleeve may be cleaned with alcohol. Metal surfaces may be cleaned with chlorothene and/or alcohol. Refer to particular reassembly procedures for instructions.

G. REASSEMBLY

1. Mounting Plate (Figure 1-5)

Directions given apply to assembly of either side of the plate.

a. Press ends of lock spring together and slide into mounting plate in position indicated. End of left spring must point toward center of plate, end of right spring must point toward outside of plate.

b. Replace lining, locating two inner holes of lining around the bosses of the plate and the two outer holes aligned with the holes in the plate.

c. Place detent spring in position indicated; be sure hole of spring is around lower boss. Hump in spring must face upward.

d. Place lock assembly in position so the two inner holes of lock assembly are directly above the bosses of the plate; the arrow on the lock assembly must point down.

e. Apply Glyptol ZV-903 to threads of two machines screws and secure lock assembly in position with these screws.

f. The lock assembly must move freely and smoothly in both upward and downward directions. When lock is in upward position (opposite arrow direction), detent action must hold lock positively in upward direction.

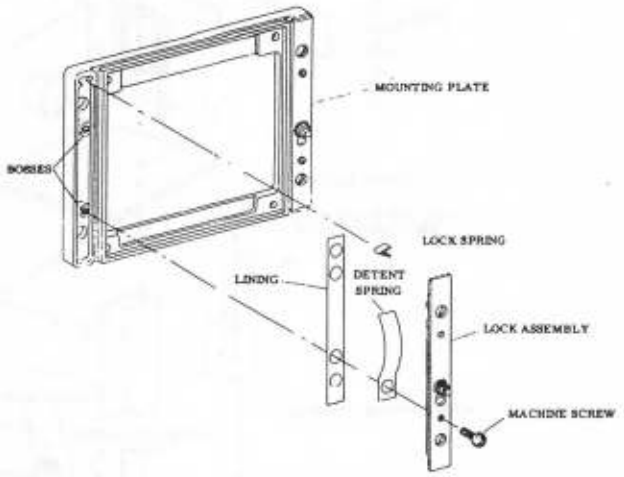


Figure 1-5. MOUNTING PLATE REASSEMBLY

2. Lens Barrel Sleeve (Figure 1-6)

a. Clean guide with a lint-free cloth dampened with alcohol.

b. Clean bearing by dipping it in chlorothene. After bearing is dry, wipe it with a lint-free cloth dampened with alcohol.

c. Clean outer diameter of sleeve assembly with a lint-free cloth dampened with alcohol.

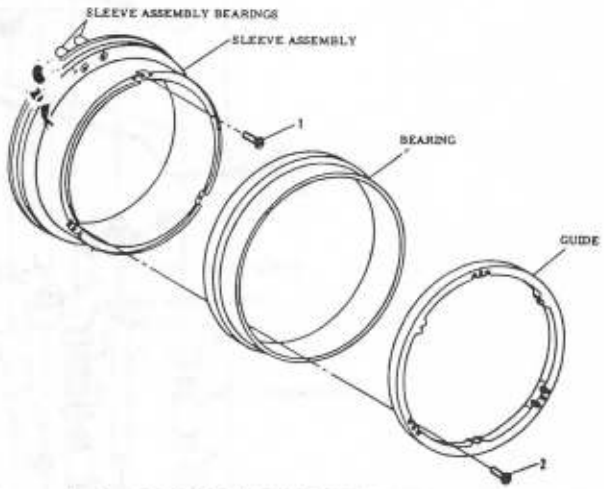


Figure 1-6. LENS BARREL SLEEVE REASSEMBLY

NOTE

Guide, bearing, and sleeve assembly must be absolutely clean and free of contaminants of any kind before reassembly.

d. Lubricate inner diameter of bearing and outer diameter of sleeve assembly (interfaces) with very light coating of FS-1290 grease.

e. Place bearing on sleeve assembly, lining up groove in rear of bearing with holes in sleeve assembly bearings.

f. Apply Loctite Sealant "E" to threads of three screws (1) and replace screws, just contacting underside of screw head against sleeve.

g. Place guide on bearing. Slide three 0.002" shims between guide and bearing at screw areas but do not cover screw heads.

h. Apply Loctite Sealant "E" to threads of six outer screws (2) and replace screws, just contacting guide. Back off three screws (1) with five inch/ounces torque. Remove shims.

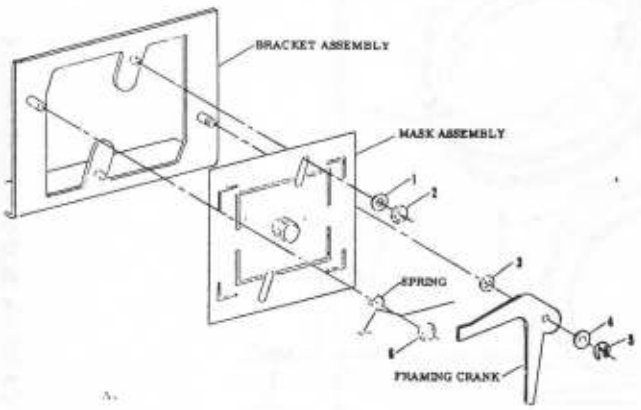


Figure 1-7. FRAMING MASK REASSEMBLY

3. Framing Mask (Figure 1-7)

a. Secure mask assembly to bracket assembly with washers (1) and retaining ring (2).

b. Place washer (3) on stud located at lower right side of bracket assembly.

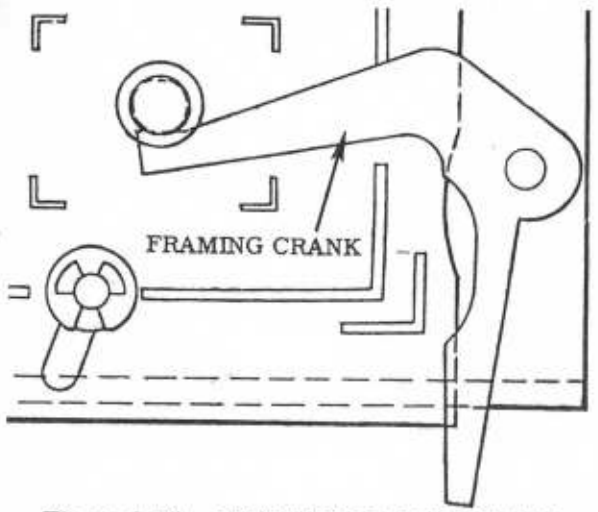


Figure 1-7A. FRAMING CRANK POSITION

c. Place framing crank on same stud. (Position as shown in Figure 1-7A.) Secure in position with two washers (4) and retaining ring (5).

d. Place spring on stud located at upper left side of bracket assembly. (Position as shown in Figure 1-7B.) Secure in position with retaining ring (6).

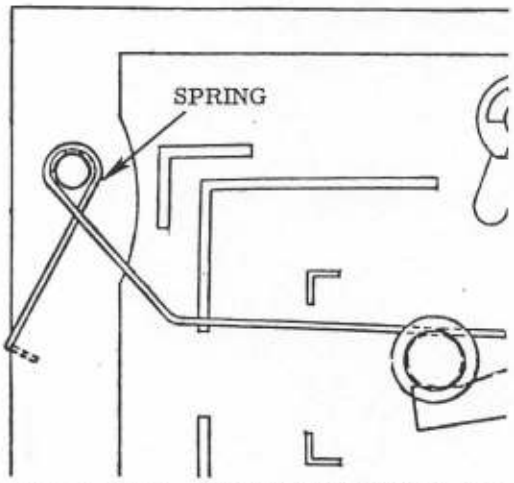


Figure 1-7B. MASK SPRING POSITION

4. Camera Body, Model xlw (Figure 1-8)

All directions given in this paragraph are from the operator's end of the camera.

a. The medallion is replaced by activating the adhesive backing using the least amount of trichloroethylene needed. (Check for adequate activation by touching the adhesive. If the adhesive pulls away in string-like fashion, backing is properly activated. If only slightly tacky, more solvent is needed. If adhesive is gummy, excessive solvent has been applied.) After activation, medallion should be applied to support assembly within a maximum of seven seconds. After application, smooth out medallion with dry cloth or roller to assure proper contact and eliminate wrinkles or air bubbles. Apply moderate pressure only.

b. Place threaded insert in baseplate, 3/4 to 1-3/4 turns below flush.

c. Apply Loctite Sealant "C" to threads of two screws (1) and assemble baseplate to support assembly with these screws.

d. Place sleeve assembly on support assembly.

NOTE

If a new sleeve assembly (or new focusing ring bearing of the sleeve assembly) is being used for reassembly, refer to para. H., Part 1, for replacement and alignment procedures.

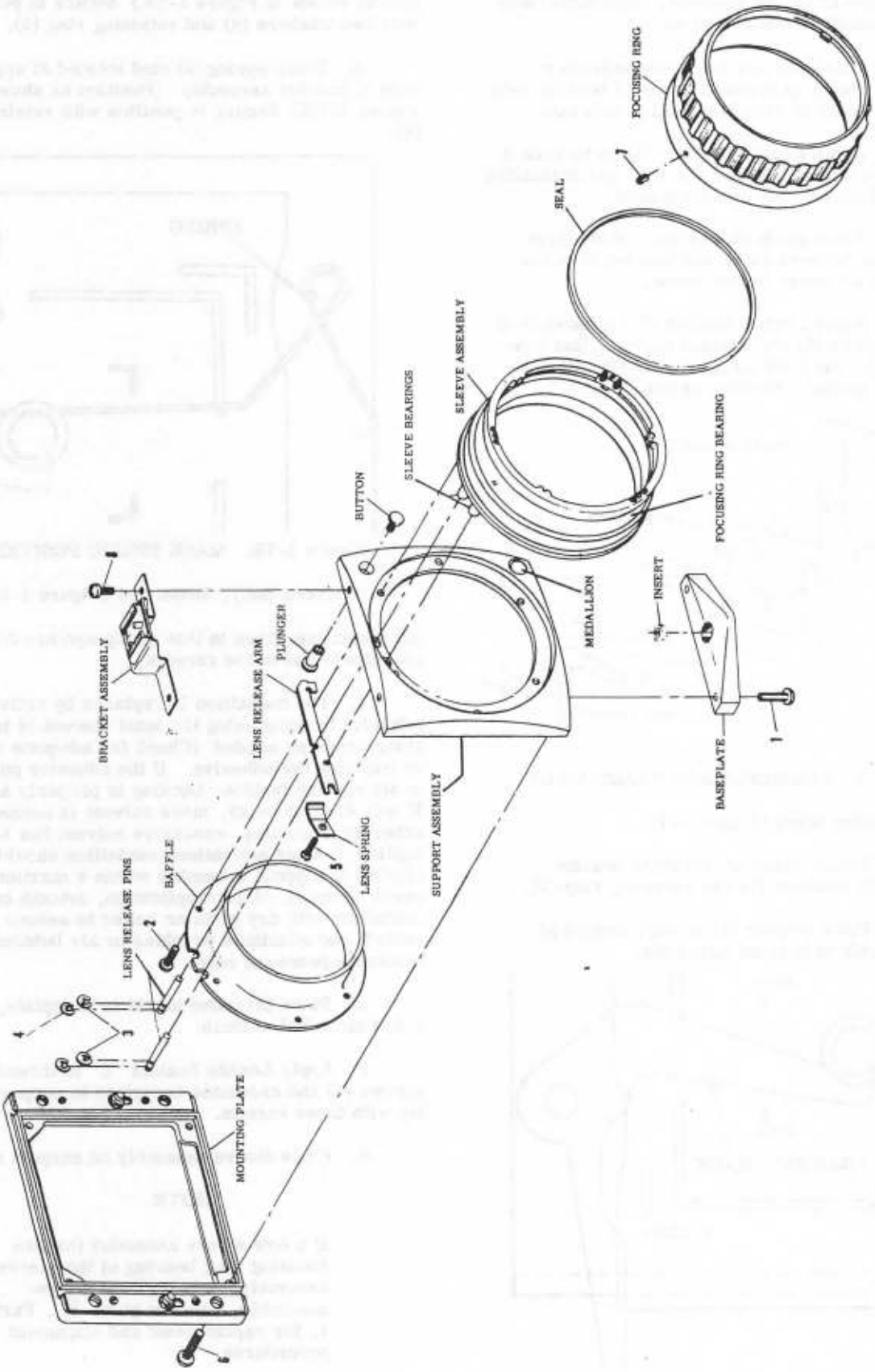


Figure 1-8. MODEL xlw CAMERA BODY REASSEMBLY

e. Place seal in groove formed by support and sleeve assemblies. Seal must lie flat; make sure it is not twisted.

f. Apply Loctite Sealant "C" to threads of six screws (2) and assemble baffle to support assembly with these screws.

g. Apply Loctite Sealant "C" to threads of button. Replace plunger in its mounting hole and screw button into plunger.

h. Place two lens release pins into bearings of sleeve assembly.

i Place retaining rings (3) on inner grooves of pins.

j. Place lens release arm on pins as indicated, elongated hole in arm to fit around stud on left side of support assembly and square shoulder of arm to face down. Replace retaining rings (4) on outer grooves of pins.

k. Place spring in position, hump portion overlapping lens release arm. Apply Loctite Sealant "C" to threads of screw (5) and secure spring with screw.

m. Secure mounting plate to support assembly with four screws (6). Be sure mounting plate sits squarely on support assembly.

n. Place focusing ring on sleeve. Be sure to line up holes exactly. Apply Loctite Sealant "C" to threads of three screws (7). Secure focusing ring with these screws.

NOTE

If a new focusing ring is being used for reassembly, refer to para. H., Part 1, for replacement and alignment procedures.

o. Bend lens release arm as necessary near left lens release pin so that with button fully depressed, focusing ring will rotate into lens release position, and with ring in lens release position, the free end of the arm will not spring back more than 0.015" when button is released.

p. Apply Loctite Sealant "C" to threads of two screws (8). Assemble bracket assembly to support assembly with these screws.

5. Camera Body, Model xl Special (Figure 1-9)

All directions given in this paragraph are from operator's end of the camera.

a. The medallion is replaced by activating the adhesive backing using the least amount of trichloroethylene needed. (Check for adequate activation by touching the adhesive. If the adhesive pulls away in string-like fashion, backing is properly activated. If only slightly tacky, more solvent is needed. If adhesive is gummy, excessive solvent has been applied.) After activation, medallion should be applied to support assembly within a maximum of seven seconds. After application, smooth out medallion with dry cloth or roller to assure proper contact and eliminate wrinkles or air bubbles. Apply moderate pressure only.

b. Place threaded insert in baseplate, 3/4 to 1-3/4 turns below flush.

c. Assemble one baseplate spring in recess of each side of baseplate, spring opening to be toward center of baseplate.

d. Apply Loctite Sealant "C" to threads of two screws (1) and assemble baseplate to support assembly with these screws.

e. Place sleeve assembly on support assembly.

NOTE

If a new sleeve assembly (or focusing ring bearing of sleeve assembly) is being used for reassembly, refer to para. H., Part 1, for replacement and alignment procedures.

f. Place seal in groove formed by support assembly and sleeve assembly. Seal must lie flat; make sure it is not twisted.

g. Apply Loctite Sealant "C" to threads of six screws (2) and assemble baffle to support assembly and sleeve assembly with these screws.

h. Apply Loctite Sealant "C" to threads of button. Replace plunger in its mounting hole and screw button into plunger.

i. Place two lens release pins into bearings of sleeve assembly.

j. Place retaining rings (3) on inner grooves of pins.

k. Place lens release arm on pins as indicated, elongated hole in arm to fit around stud on left side of support assembly and square shoulder of arm to face down. Replace retaining rings (4) on outer grooves of pins.

m. Place lens spring in position, hump portion overlapping lens release arm. Apply Loctite Sealant "C" to threads of screw (5) and secure spring with screw.

n. Place camera body on support assembly so the body sits on lower shoulder of support assembly. (This should be a snug fit and almost snap in place.)

o. Apply Loctite Sealant "C" to threads of two screws (6); secure camera body to baseplate with these screws.

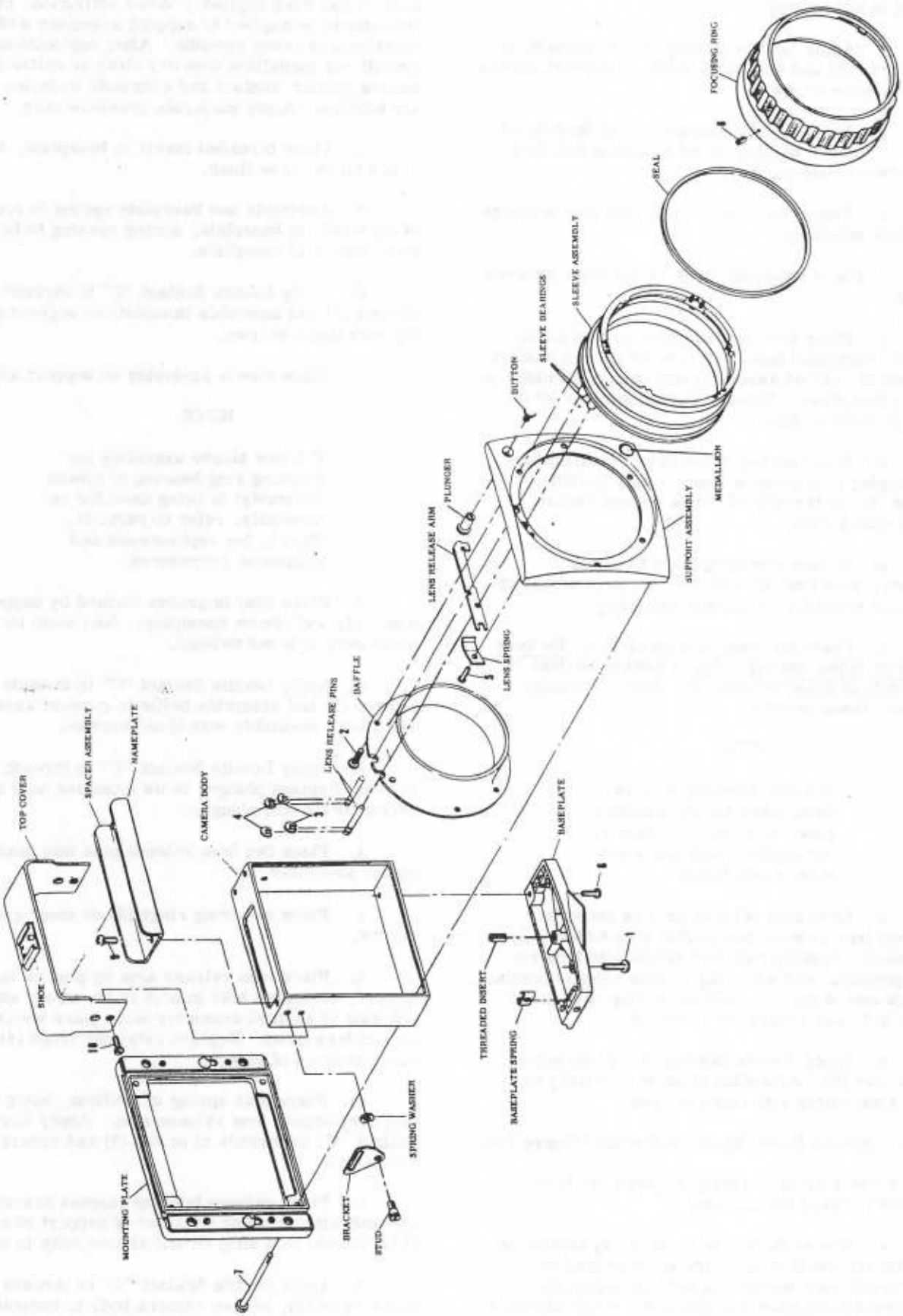


Figure 1-9. MODEL xl SPECIAL CAMERA BODY REASSEMBLY

p. Apply Loctite Sealant "C" to threads of four screws (7) and secure mounting plate to support assembly with these screws. Be sure mounting plate sits squarely on camera body. (Screws do not engage camera body but go through to support assembly. Camera body is braced between mounting plate and support assembly.)

q. Replace focusing ring on sleeve. Be sure to line up holes exactly. Apply Loctite Sealant "C" to threads of three screws (8). Secure focusing ring with these screws.

r. Bend lens release arm as necessary near left lens release pin so that with button fully depressed, focusing ring will rotate into the lens release position, and with ring in lens release position, the free end of the arm will not spring back more than 0.015" when button is released.

s. Replace spacer assembly on top of camera body. Apply Loctite Sealant "C" to threads of two screws (9). Secure spacer assembly to camera body with these screws.

t. The name plates are replaced by activating the adhesive backing as instructed in step a.

u. Apply Loctite Sealant "C" to threads of two screws (10). Orient top cover with open end of accessory shoe facing toward back of camera. Secure top cover to camera body with screws (10).

v. Apply Loctite Sealant "C" to threads of two studs. Assembly studs through brackets and spring washers (convex side of washer toward bracket). Screw studs in camera body.

6. RANGEFINDER (Figure 1-10)

Reassembly of the rangefinder will be facilitated by using Rangefinder Assembly Engaging Fixture ST-6636.

a. Place upper plate in position over large cutout in fixture. Front edge of plate must be against center bar with screw holes aligned. Secure plate to fixture.

b. Lubricate two holes on upper plate into which clutch shaft assembly and mirror mount assembly fit. Use least amount of FS-1290 grease needed.

c. Position fixture, locating bottom of plate toward repairman.

d. Place clutch shaft assembly in position; follower arm tip must be positioned beneath small cutout in fixture. Place hub (1) in position. Apply Glyptal ZV-903 to threads of screw (2) and secure hub to clutch shaft with screw.

e. Reassemble post assembly.

1. Dowel pin must protrude equally on both sides of clutch lever assembly.

2. Mirror arm spring must not bind on shoulder of clutch lever assembly when spring is flexed 115°.

f. Apply Glyptal to small diameter of clutch lever post (on end opposite spring).

g. Apply Glyptal to threads of screw (3) and secure post assembly in position with screw. Clutch lever assembly must lie parallel to both edges of plate.

h. Assemble clutch lever spring and two retaining rings (4) to rangefinder spacer.

i. Apply Glyptal to small diameter at top of spacer and place large diameter of spacer in loop of upper mirror pivot spring and then into position in upper plate. Openings of two retaining rings on spacer must face clutch lever assembly. Pivot spring must lie flat against upper plate and its curved end (not bent end) must be on opposite side of clutch shaft assembly collar from follower arm. Hook of clutch lever spring must hook over lever assembly as shown in figure 1-10A.

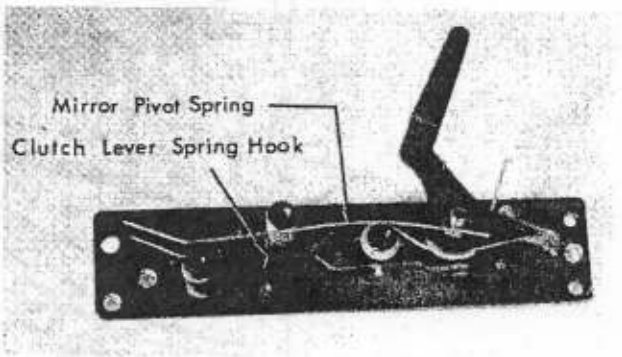


Figure 1-10A. SPRING POSITIONING

j. Apply Glyptal to threads of screw (5) and secure rangefinder spacer with this screw.

k. Assemble two retaining rings (6) to other rangefinder spacer. Apply Glyptal to small diameter at top of spacer. Apply Glyptal to threads of screw (7) and secure spacer to upper plate with this screw.

m. Place lower mirror pivot spring in position. Loop of spring must be around rangefinder spacer, between lower retaining ring and shoulder of spacer. Curved end of spring is positioned as shown in figure 1-10A. (Both upper and lower pivot spring must be on same side of clutch shaft.)

n. Apply Glyptal to two holes in lower plate into which the small diameters of rangefinder spacers will fit.

o. Place lower plate in position. Replace two washers (11) and retaining rings (12). Be sure mirror pivot springs are not caught under shoulder of either rangefinder spacer.

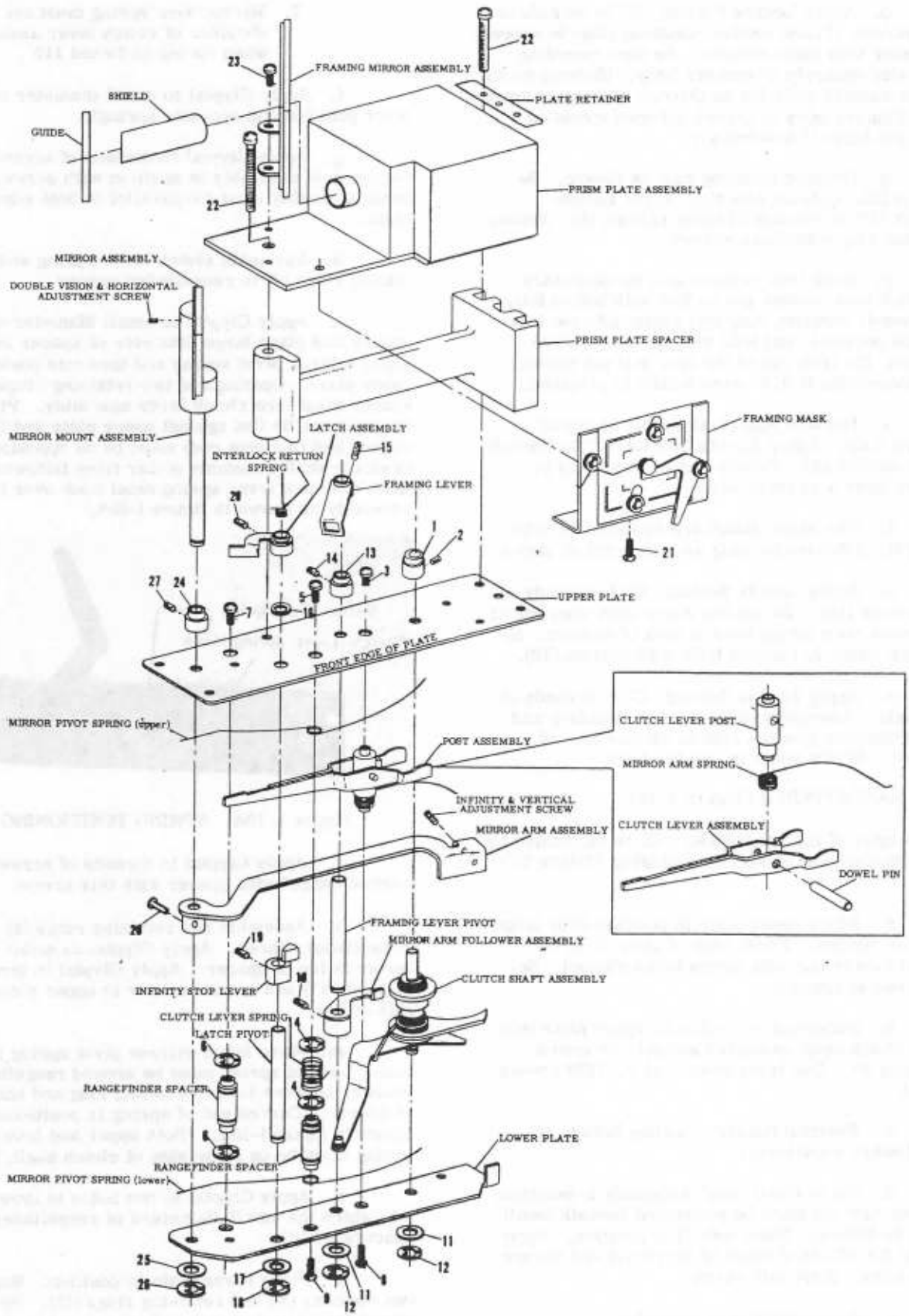


Figure 1-10. RANGEFINDER REASSEMBLY

p. Insert guide pin (supplied with fixture) through holes in upper and lower plate where mirror mount assembly normally goes.

q. Upper and lower plates must be parallel to each other and guide pin must be perpendicular to both plates. Adjust plates to this condition. Apply Glyptal to threads of screws (8 & 9). Secure lower plate in position with these screws.

r. Place framing lever pivot and mirror arm follower assembly in position. Mirror arm follower assembly should sit on lower plate. Secure mirror arm follower to framing lever pivot with screw (10). Replace washer (11), retaining ring (12), hub (13), and screw (14). Secure framing lever in position at top of pivot with screw (15).

s. Place washer (16) and latch assembly in position.

t. Place infinity stop lever in position on lower plate. Curve of A shaped shoulder must face clutch lever spring. Slide latch pivot through latch assembly, upper plate, infinity stop lever, and lower plate. Replace washer (17) and retaining ring (18). Secure infinity stop lever (sitting on lower plate) in position with screw (19). Secure latch assembly in position with screw (20). Slide interlock return spring on latch pivot (above latch assembly).

u. Adjustments

Following adjustments are made using a 0.003"shim.

1. Place shim between hub (13) and upper plate. If shim does not fit between hub and plate or if there is more than 0.003" (thickness of shim) between hub and plate, loosen screw (14) and set hub 0.003" above plate. Tighten screw and remove shim.

2. Place shim between hub of latch assembly and upper plate. If shim does not fit between hub and plate or if there is more than 0.003" (thickness of shim) between hub and plate, loosen screw (20) and set hub 0.003" above plate. Tighten screw and remove shim.

3. Place shim between hub of infinity stop lever and lower plate. If shim does not fit between hub and plate or if there is more than 0.003" (thickness of shim) between hub and plate, loosen screw (19) and set hub 0.003" above plate. Tighten screw and remove shim.

v. Using a height gage or depth micrometer, measure distance from tip of follower arm to bottom of upper plate. Distance must be 0.570" as shown in figure 1-10B. If distance is not at this dimension, proceed as follows:

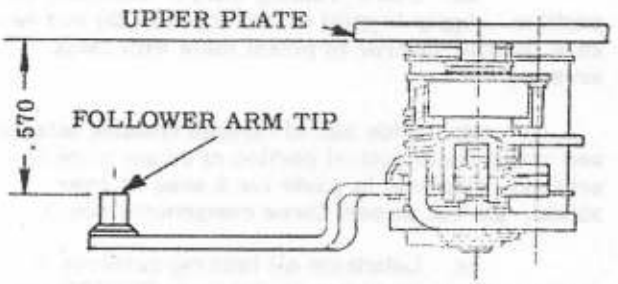


Figure 1-10B. FOLLOWER ARM SETTING

1. Use two Adjusting Levers T-40080-FF. Place head of each lever as shown in figure 1-10C.

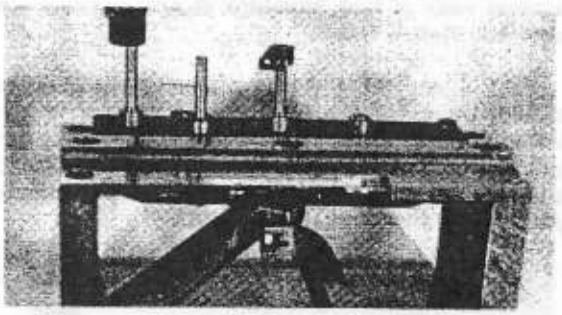


Figure 1-10C. ADJUSTING LEVER USE

2. Lever placed nearest bend in follower arm is used to hold follower arm in position. Do not exert any force on this lever.

3. Lever nearest tip is used to bend arm. Only a slight bend is necessary to bring arm to proper dimension.

w. Apply Glyptal to threads of screw (21). Assemble framing mask to prism plate assembly with this screw.

x. Place prism plate spacer in position; place prism plate assembly in position on top of spacer. Adjust prism plate assembly so back edge is parallel within 0.002" to front edge of upper plate. Place plate retainer in position (chamfered edges outward).

y. Apply Glyptal to threads of two screws (22). Secure prism plate assembly to upper plate with these screws. Recheck parallelism of prism to upper plate. (Rear edge of prism plate should be parallel to edge of engaging fixture.) End of framing crank must go into slot of framing lever. Adjust framing lever (up or down) on pivot so end of framing crank protrudes through 0.010" minimum.

z. Wind long shank of interlock return spring clockwise past prism plate spacer. Release the shank; it must locate against front of spacer. Using a gram gage, apply pressure (in a clockwise direction) against tip ot latch assembly. Pressure required to move this tip should be 16 to 24 grams.

aa. Place framing mirror assembly in position. Apply Glyptal to two screws (23) and secure framing mirror to prism plate with these screws.

bb. Slide shield through framing mirror and over tube in optical portion of prism plate assembly. Size hole in guide for a snug fit over shield. (Do not cement these components now.)

cc. Lubricate all bearing surfaces of shaft of mirror mount assembly with FS-1290 grease. Place hub (24) in position.

dd. Place mirror arm assembly in position. Curved end of mirror arm spring must locate against rear of long shoulder of arm assembly as shown in figure 1-10D.

ee. Pull bent (not curved) ends of both mirror pivot springs toward rear edge of upper and lower plates. Slide mirror mount assembly through hub (24), upper plate, mirror arm assembly hub, and lower plate. Release springs. They should position as shown in figure 1-10D.

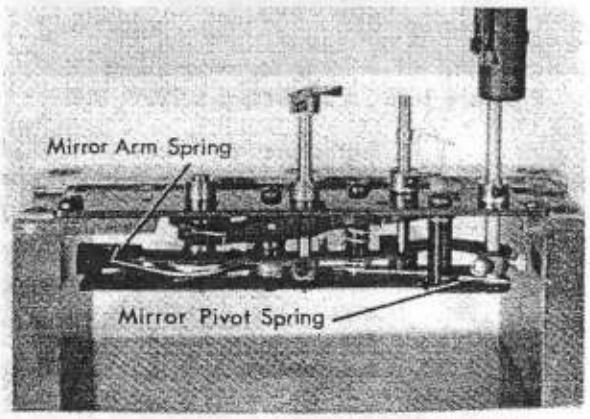


Figure 1-10D. SPRING POSITIONING

ff. Turn mirror mount assembly to an angle of approximately 45° from rear edge of upper plate and facing (but not parallel with) framing mirror assembly. Replace washer (25) and retaining ring (26).

gg. Push up on end of mirror mount assembly shaft as far as it will go. Hold in this position. Place a 0.003" shim between hub (24) and upper plate. If shim does not fit between hub and plate or if there is more than 0.003" (thickness of shim) between hub and plate, loosen screw (27) and set hub 0.003" above plate. Tighten screw, remove shim, and release shaft.

hh. Adjust mirror arm assembly so rear edge of arm is parallel within 0.010" to front edge of upper plate. Mirror arm assembly must be high enough to clear lower shoulder of infinity stop lever but low enough to stop pointed end (opposite end from tip) of follower arm from passing below mirror arm assembly. Two screws (28) will control this adjustment up or down on mirror arm assembly shaft. With a gram gage, push against mirror arm assembly on front of long shoulder (opposite side from vertical adjustment screw). Gage should read 95 to 105 grams.

ii. Using Synthetic Infinity Target ST-6639 and Rear Eyepiece ST-6635 (rear eyepiece is clipped to prism plate spacer so lens is over range finder prism), rotate horizontal and vertical adjustment screws to achieve vertical and horizontal coincidence at infinity. This adjustment should be made with target 16 to 20 feet from film plane of camera. Single vertical bar of target must be exactly centered between double vertical bars of fork; its upper half will be superimposed over handle of fork. Right half of dotted line should be superimposed on same horizontal plane as left half of line. If unable to make these adjustments by rotating vertical and horizontal adjustment screws, loosen screws (27 & 28) and move the mirror mount assembly a few degrees in either direction. Repeat steps gg through ii.

7. Camera Body, Rangefinder Model (Figure 1-11)

All directions given in this paragraph are from operator's end of camera.

a. The medallion is replaced by activating the adhesive backing using the least amount of trichloroethylene needed. (Check for adequate activation by touching the adhesive. If the adhesive pulls away in string-like fashion, backing is properly activated. If only slightly tacky, more solvent is needed. If adhesive is gummy, excessive solvent has been applied.) After activation, medallion should be applied to support assembly within a maximum of seven seconds. After application, smooth out medallion with a dry cloth or roller to assure proper contact and to eliminate wrinkles or air bubbles. Apply moderate pressure only.

b. Place sleeve assembly on support assembly.

NOTE

If a new sleeve assembly (or focusing ring bearing of sleeve assembly) is being used for reassembly, refer to para. H., Part 1, for replacement and alignment procedures.

c. Place seal in groove formed by support assembly and sleeve assembly. Seal must lie flat; make sure it is not twisted.

d. Apply Loctite Sealant "C" to threads of six screws (1) and assembly baffle to support assembly and sleeve assembly with these screws.

e. Apply Loctite Sealant "C" to threads of button. Replace plunger in its mounting hole and screw button into plunger.

f. Place lens release pin into left bearing of sleeve assembly.

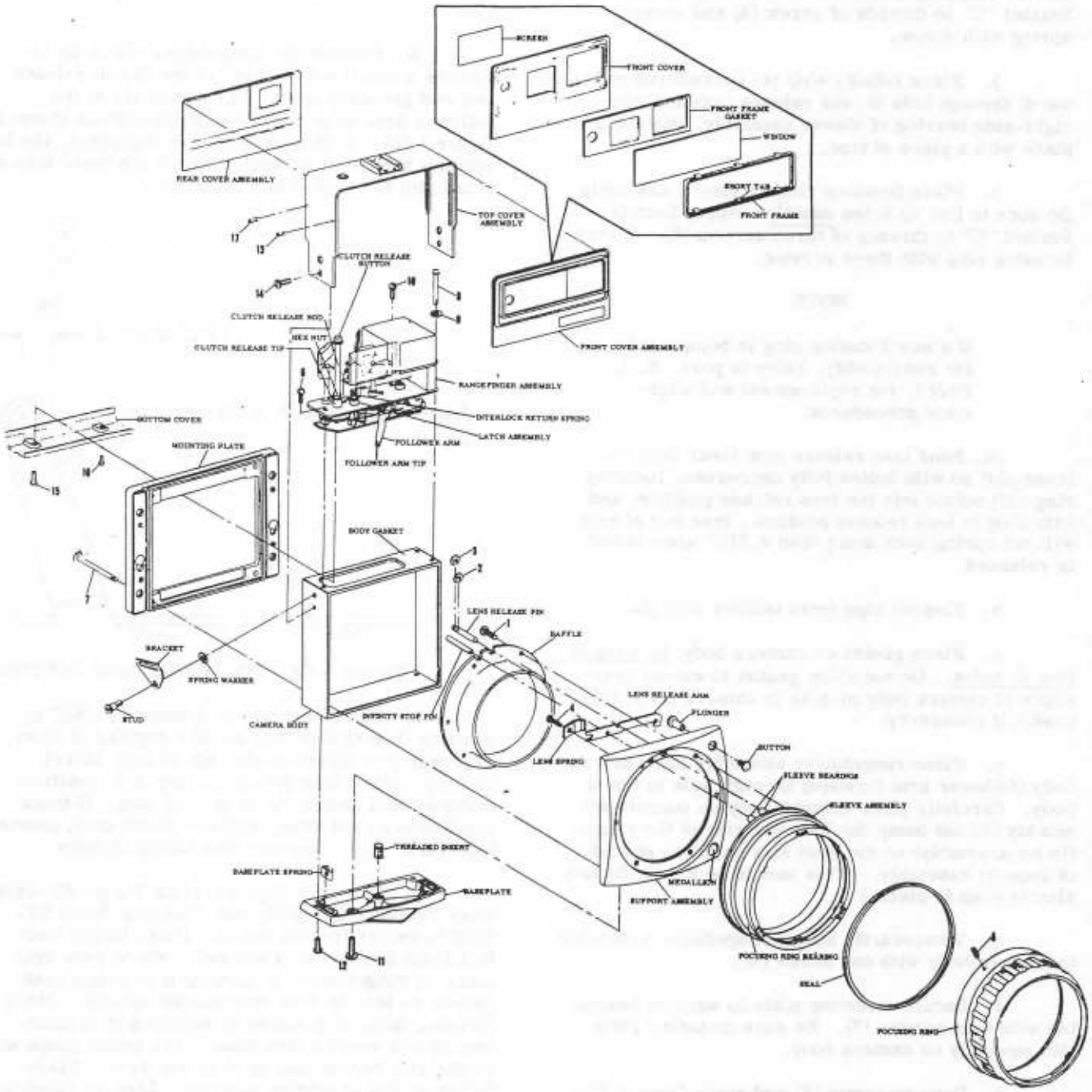


Figure 1-11. RANGEFINDER CAMERA BODY COMPLETE

g. Place retaining ring (2) on inner groove of pin.

h. Place lens release arm on pin as indicated, elongated hole in arm to fit around stud on left side of support assembly and square shoulder of arm to face down. Replace retaining ring (3) on outer groove of pin.

i. Place lens spring in position, hump portion overlapping lens release arm. Apply Loctite Sealant "C" to threads of screw (4) and secure spring with screw.

j. Place infinity stop pin (chamfered end inward) through hole in lens release arm and into right-side bearing of sleeve assembly. Retain in place with a piece of tape.

k. Place focusing ring on sleeve assembly. Be sure to line up holes exactly. Apply Loctite Sealant "C" to threads of three screws (5). Secure focusing ring with these screws.

NOTE

If a new focusing ring is being used for reassembly, refer to para. H. 1, Part 1, for replacement and alignment procedures.

m. Bend lens release arm (near lens release pin) so with button fully depressed, focusing ring will rotate into the lens release position, and with ring in lens release position, free end of arm will not spring back more than 0.015" when button is released.

n. Remove tape from infinity stop pin.

o. Place gasket on camera body; be sure to line up holes. Do not allow gasket to extend over edges of camera body or hole in camera body; trim gasket if necessary.

p. Place rangefinder assembly into camera body (follower arm forward) through hole in top of body. Carefully place camera body on support assembly (do not bump the follower arm of the rangefinder assembly) so the body sits on lower shoulder of support assembly. (This should be a snug fit and almost snap in place.)

q. Temporarily attach rangefinder assembly to camera body with one screw (6).

r. Secure mounting plate to support assembly with four screws (7). Be sure mounting plate sits squarely on camera body.

s. Remove screw (6) and apply Glyptal ZV-903 (purple) to threads of both screws (6) and replace screws but do not tighten down.

t. Apply Glyptal ZV-903 to threads of screws (8). Replace screws and washers (9). Screw (8) must not protrude through camera body more than 0.005". Use washers (9) as required to obtain this dimension but do not tighten this screw down.

u. Adjust rangefinder assembly so it is parallel within 0.004" to back of mounting plate. Lay camera down on mounting plate, using a surface plate as a rest. With a height gage and dial indicator, determine if the tolerance is correct.

v. Tighten screws (6 & 8). Replace screw (10).

w. Release the rangefinder clutch by inserting a small rod in place of the clutch release rod and pressing down. The center tip of the follower arm must concur with dimensions shown in figure 1-11A. If this dimension is incorrect, the lens release arm must be bent at small tab (near lens release pin) to achieve this dimension.

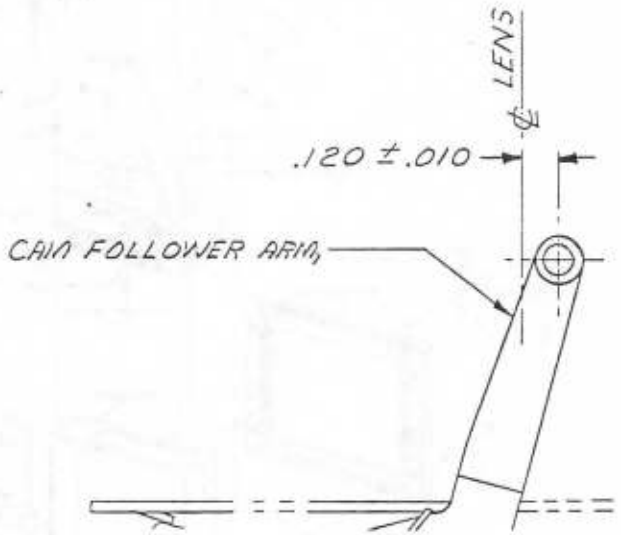


Figure 1-11A. FOLLOWER ARM SETTING

x. Place lens barrel dummy ST-6637 in position (insert it as you would a regular xl lens). Follower arm should clear cam of lens barrel dummy. When lens barrel dummy is in position, follower arm should sit on step of cam. If these conditions do not exist, replace clutch shaft assembly, para. G.6. Remove lens barrel dummy.

y. Use Four Foot Parallax Target ST-6638, Rear Eyepiece ST-6635, and Focusing Panel ST-6640 to center framed image. Place target four feet from film plane of camera. Place rear eyepiece on rangefinder by clipping it to prism plate spacer so lens is over rangefinder spacer. Place focusing panel in position by snapping it in place just as you would a film back. The small scope will be directly behind lens of rear eyepiece. Place focusing ring at infinity position. Line up camera through lens of focusing panel. Look through lens and line it up with fine line circle at bottom of target. Move follower assembly (Figure 1-10) against arm assembly (Figure 1-10) and orient lever assembly (Figure 1-10) to center inner corners of inner square of framing mask with two upper circles of

target as shown in figure 1-11B. Focus down to four feet and center inner corners of inner square of mask with two lower circles of target as shown in figure 1-11C. If framed image will not center vertically, loosen screw (15, Fig. 1-10) and move framing lever (up or down) on pivot. Minimum tolerance of 0.010" must be maintained. Refer to para. G.6. step y. If framed image will not center horizontally, loosen two screws (23, Fig. 1-10) and move framing mirror slightly clockwise or counter-clockwise.

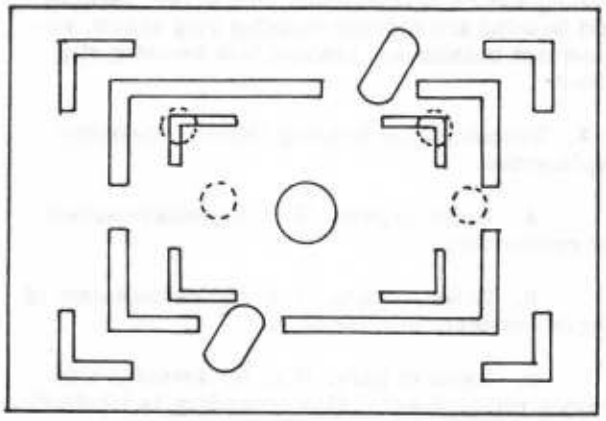


Figure 1-11B. RANGEFINDER MASK SETTING AT INFINITY

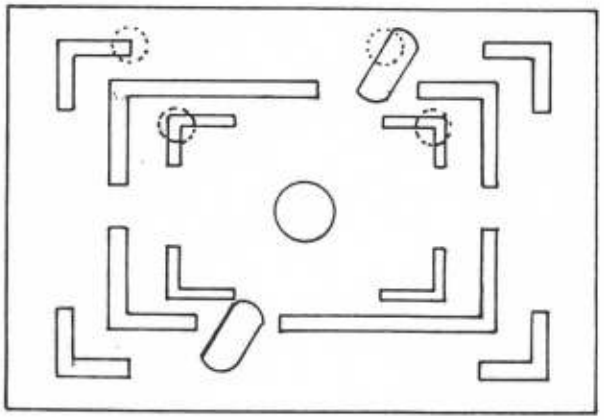


Figure 1-11C. RANGEFINDER MASK SETTING AT FOUR FEET

z. Using least amount of adhesive EC-847 needed, cement shield and guide in position.

8. Body and Rangefinder Complete (Figure 1-11)

a. Place threaded insert in baseplate 3/4 to 1-3/4 turns below flush.

b. Assemble one baseplate spring in recess of each side of baseplate (spring opening toward center of baseplate).

c. Apply Glyptal to threads of two screws (11). Assembly baseplate to support assembly with these screws. Attach baseplate to camera body with two screws (12).

d. Place clutch release tip, hex nut, clutch release rod, and clutch release button in position.

e. Reassemble front cover assembly.

1. Note position of short tab on front frame.

2. Locate screen visually centered about smaller rectangular opening in front cover and press firmly in place.

f. Place front cover assembly in position on top cover assembly. Apply Glyptal to threads of three screws (13).

g. Place top cover assembly in position. Apply Glyptal to threads of two screws (14). Attach top cover assembly to camera body with these screws.

h. Turn focusing ring to infinity position.

i. Infinity stop lever (Fig. 1-10) should be positioned against infinity stop pin (Fig. 1-10). If not in this position, push shoulder of lever clockwise until shoulder just contacts pin. Hold in position.

j. Tab of latch assembly must be positioned as shown in figure 1-11D. Loosen screw (20, Fig. 1-10) to make this adjustment. Be sure to tighten screw after adjustment.

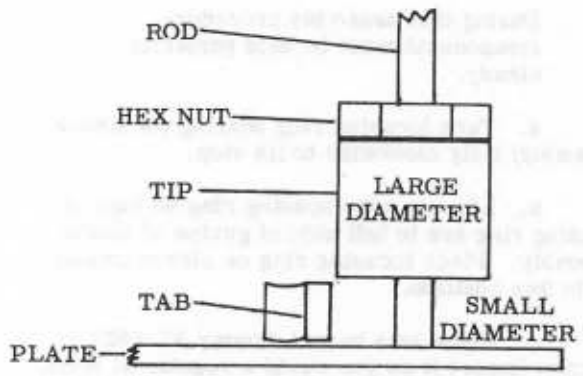


Figure 1-11D. TAB SETTING

k. Turn focusing ring off infinity position to any other setting.

m. Tab of latch assembly must be positioned as shown in figure 1-11E. If tab is not in position, repeat steps h thru j.

n. Adjust clutch release tip to set free play between tip and clutch lever assembly (Fig. 1-10) from 0.005" to 0.010". This is accomplished by moving tip and hex nut up or down on clutch release rod.

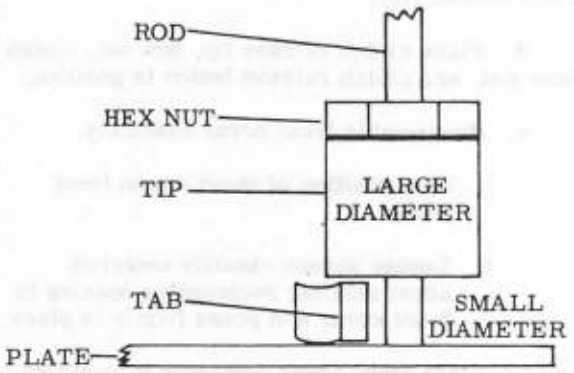


Figure 1-11E. TAB SETTING

o. Apply Glyptal to threads of screws (15 & 16). Assemble bottom cover to rangefinder with these screws.

p. Place rear cover assembly in position. Apply Glyptal to threads of three screws (17). Attach rear cover assembly to top cover assembly with these screws.

q. Apply Loctite Sealant "C" to threads of two studs. Assemble studs through brackets and spring washers (convex side of washer toward bracket). Screw studs in camera body.

H. SPECIAL REASSEMBLY PROCEDURES

1. Focusing Ring Replacement

NOTE

During this assembly procedure, components must be held perfectly steady.

a. Turn focusing ring bearing (of sleeve assembly) fully clockwise to its stop.

b. Line-up new focusing ring so lugs of focusing ring are to left side of guides of sleeve assembly. Place focusing ring on sleeve assembly in this position.

c. Place lens barrel dummy ST-6637 in position (insert it as you would a regular xl lens). Do not move focusing ring.

d. Place camera body on a surface plate (mounting plate of camera in contact with surface plate).

e. Turn focusing ring clockwise so depth gage reads indicated infinity dimension marked on lens dummy barrel. Measure from top of lens barrel dummy to face of surface plate.

f. Set depth collar (part of ST-6641) on a bushing (part of ST-6641). Place a 0.059" (No. 53) drill through collar and bushing so tip of drill extends through bushing 0.050". Tighten collar on drill and remove bushing.

g. Assemble three bushings into screw holes of focusing ring, again being careful not to move focusing ring. Make sure bushings are seated snug against focusing ring bearing.

h. Drill through holes of bushings to collar of drill.

i. After drilling three holes, remove one bushing and replace focusing ring screw; remove next bushing and replace focusing ring screw; remove last bushing and replace last focusing ring screw.

2. Focusing Ring Bearing (Sleeve Assembly) Replacement

a. Refer to para. G.2. for sleeve assembly reassembly.

b. Refer to para. G.7. for replacement of sleeve assembly to camera.

c. Refer to para. H.1. for focusing ring bearing replacement. This procedure is identical to para. H.1.

J. LUBRICANTS, ADHESIVES OR SEALANTS, AND SOLVENTS.

As a convenience for service and repair, materials have been set up in economic quantities. Materials identified with a Graflex part number can be ordered by part number directly from Graflex Inc.

USED ON	REFERENCE	LUBRICANT	GRAFLEX PART NO.
Shaft Assembly (all bearing surfaces)	Para. G.6. and (51, Fig. 2-2)	FS-1290	39479P4 (1/2 oz.) 39484P5 (8 oz.)
Mount Assembly (all bearing surfaces)	Para. G.6. and (2, Fig. 2-2)		
Bearing (inside dia.)	Para. G.2. and (3, Fig. 2-8)		
Sleeve (outer dia.)	Para. G.2. and (5, Fig. 2-8)		
USED ON	REFERENCE	ADHESIVE OR SEALANT	GRAFLEX PART NO.
Button (threads)	Paras. G.4., G.5., and G.7.; (15, Fig. 2-3), (21, Fig. 2-4), and (14, Fig. 2-5)	Loctite Sealant "C"	39491P6 (1/3 oz.)
Stud (threads)	Para. G.5. and (2, Fig. 2-4)		
Screw (threads)	Paras. G.4., G.5., and G.7.; (4, Fig. 2-5), (9, Fig. 2-4), and (3, Fig. 2-3)		
Screw (threads)	Para. G.5. and (5, Fig. 2-4)		
Screw (threads)	Para. G.5. and (7, Fig. 2-4)		
Screw (threads)	Paras. G.4., G.5., and G.7.; (16 & 8, Fig. 2-5), (23 & 15, Fig. 2-4), and (17 & 9, Fig. 2-3)		
Screw (threads)	Para. G.4. and (6, Fig. 2-5)		
Screw (threads)	Para. G.4. and (2, Fig. 2-5)		
Screw (threads)	Paras. G.4. and G.5.; (20, Fig. 2-5) and (27, Fig. 2-4)		
Screw (threads)	Para. G.5. and (13, Fig. 2-4)		
Screw (threads)	Para. G.5. and (11, Fig. 2-4)		
Shield	Para. G.6. and (9, Fig. 2-2)	EC-847	39491P2 (3 oz.)
Screw (threads)	Para. G.2. and (4 & 2, Fig. 2-8)	Loctite Sealant "E"	39491P8 (1/3 oz.)
Rod (threads)	Para. G.8. and (12, Fig. 2-1)	Glyptal ZV-903 (purple)	39490P1 (3 oz.)
Stud (threads)	Para. G.8. and (2, Fig. 2-1)		

Screw (threads)	Para. G.8. and (9, Fig. 2-1)		
Screw (threads)	Para. G.8. and (5 & 7, Fig. 2-1)		
Screw (threads)	Para. G.8. and (23, Fig. 2-1)		
Screw (threads)	Paras. G.8. and G.6.; (16, Fig. 2-1) and (27, Fig. 2-2)		
Screw (threads)	Paras. G.8. and G.6.; (15, Fig. 2-1) and (11, 28, 42, & 45, Fig. 2-2)		
Screw (threads)	Para. G.8. and (25, Fig. 2-1)		
Screw (threads)	Para. G.6. and (3, 19, 21, 25, 35, & 47, Fig. 2-2)		
Screw (threads)	Para. G.6. and (1 & 32, Fig. 2-2)		
Screw (threads)	Para. G.6. and (15, Fig. 2-2)		
Screw (threads)	Para. G.8. and (19, Fig. 2-1)		
Screw (threads)	Para. G.1. and (2, Fig. 2-7)		
USED ON	REFERENCE	SOLVENT	GRAFLEX PART NO.
Medallion	Paras. G.4., G.5., and G.7.	Trichloroethylene	Local Purchase
Nameplates	Para. G.5.		
Light Shield	Para. G.6. and (9, Fig. 2-2)	Toluol	Local Purchase
Guide	Para. G.6. and (8, Fig. 2-2)		
Guide	Para. G.2. and (1, Fig. 2-8)	Alcohol	Local Purchase
Bearing	Para. G.2. and (3, Fig. 2-8)		
Bearing	Para. G.2. and (3, Fig. 2-8)	Chlorothene	Local Purchase

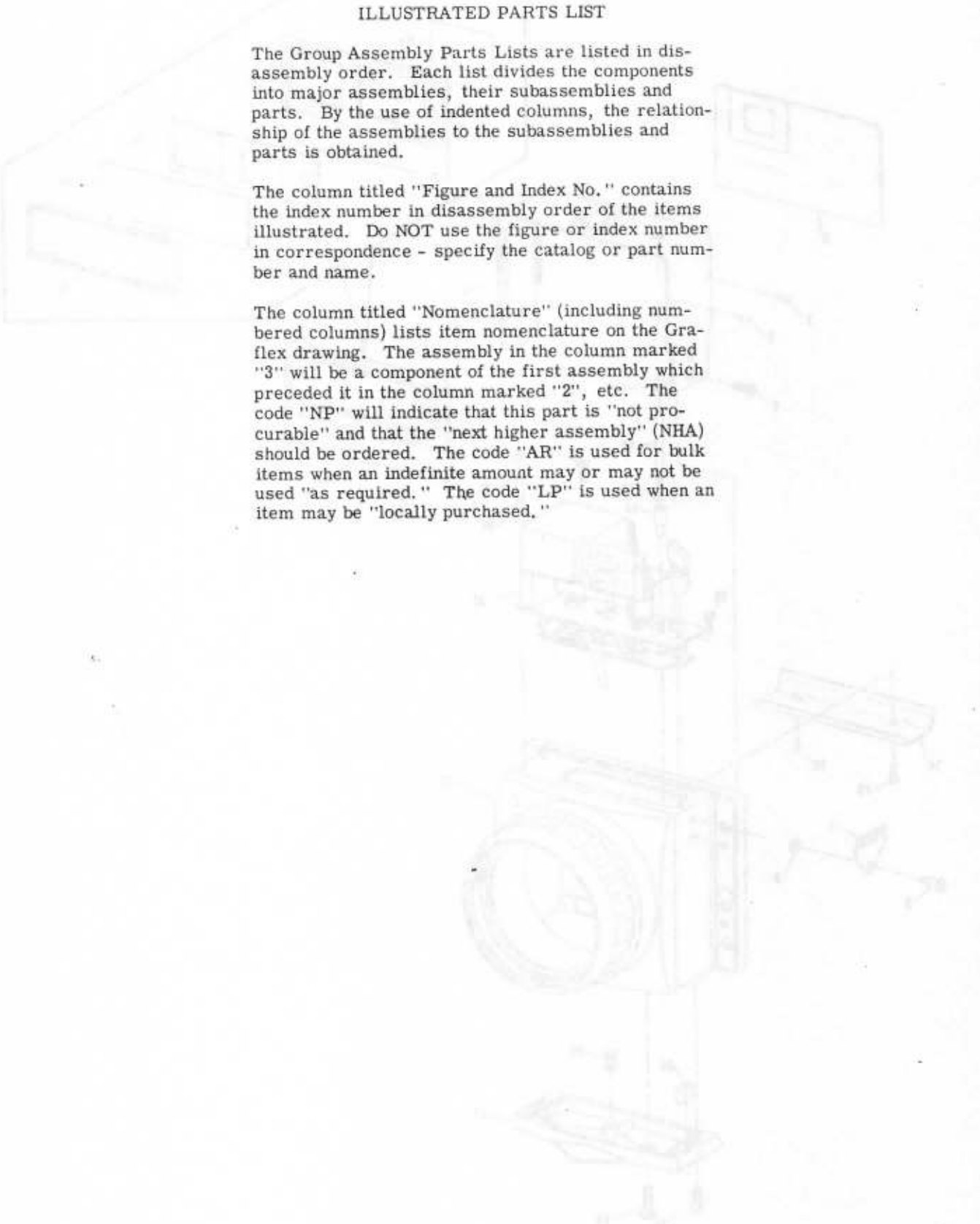
PART 2

ILLUSTRATED PARTS LIST

The Group Assembly Parts Lists are listed in disassembly order. Each list divides the components into major assemblies, their subassemblies and parts. By the use of indented columns, the relationship of the assemblies to the subassemblies and parts is obtained.

The column titled "Figure and Index No." contains the index number in disassembly order of the items illustrated. Do NOT use the figure or index number in correspondence - specify the catalog or part number and name.

The column titled "Nomenclature" (including numbered columns) lists item nomenclature on the Graflex drawing. The assembly in the column marked "3" will be a component of the first assembly which preceded it in the column marked "2", etc. The code "NP" will indicate that this part is "not procurable" and that the "next higher assembly" (NHA) should be ordered. The code "AR" is used for bulk items when an indefinite amount may or may not be used "as required." The code "LP" is used when an item may be "locally purchased."



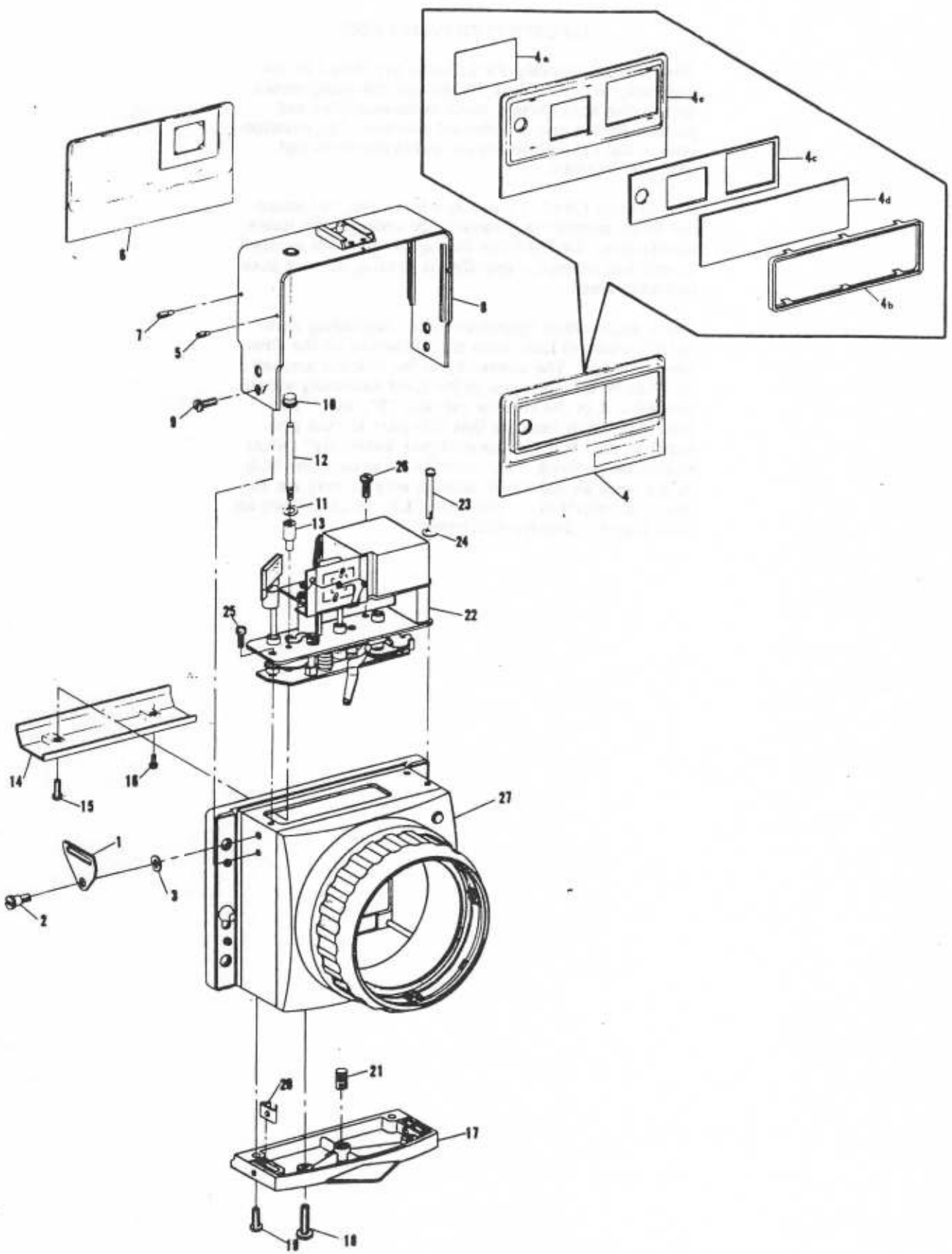


Figure 2-1. BODY & RANGEFINDER COMPLETE

Figure and Index No.	Part Number	1 2 3 4 5 Nomenclature	Qty.
1-	40080G1	Body & Rangefinder Complete - Camera, Cat. No. 7303	Ref.
	No Number	. Strap Assembly - Neck	Ref.
	40070	. . Slide - Neck Strap.	2
	40069P1	. . Strap - Neck.	1
-1	40071P1	. Bracket - Neck Strap.	2
	Attaching Part		
-2	40072	. Stud - Swivel	2
	---***---		
-3	224S14	. Washer - Spring	2
-4	40065G1	. Cover Assembly - Front	1
-4a	40085	. . Screen - Framing Mask	1
-4b	40078P1	. . Frame - Front	1
-4c	40079P1	. . Gasket - Front Frame	1
-4d	40081P1	. . Window - Front.	1
-4e	40076P1	. . Cover - Front.	1
	Attaching Part		
-5	40074	. Screw - Machine (cover)	3
	---***---		
-6	40066G1	. Cover Assembly - Rear	1
	Attaching Part		
-7	40074	. Screw - Machine (cover)	3
	---***---		
-8	40073G1	. Cover Assembly - Top	1
	Attaching Part		
-9	39911P1	. Screw - Machine (special)	2
	---***---		
-10	40048P1	. Button - Clutch Release	1
-11	200-1HB	. Nut - Machine, No. 1-64	1
-12	40046P1	. Rod - Clutch Release.	1
-13	40036	. Tip - Clutch Release	1
-14	40043P1	. Cover - Bottom	1
	Attaching Parts		
-15	116-3-3B	. Screw - Machine, No. 3-48 x 3/16 pan hd.	1
-16	116-3-2B	. Screw - Machine, No. 3-48 x 1/8 pan hd.	1
	---***---		
-17	40138P1	. Plate - Base	1
	Attaching Parts		
-18	106C6R8J	. Screw - Machine, No. 6-32 x 1/2 oval hd	2
-19	106C6R6J	. Screw - Machine, No. 6-32 x 3/8 oval hd	2
	---***---		
-20	40162	. Spring - Baseplate	2
-21	40149P1	. Insert - Threaded.	1
-22	40080G2	. Rangefinder Assembly (Figure 2-2)	1
	Attaching Parts		
-23	106-4R20B	. Screw - Machine, No. 4-40 x 1-1/4 oval hd	2
-24	35473-9K	. Washer - Flat, 0.187 x 0.129 x 0.010	2
-25	116-4R3B	. Screw - Machine, No. 4-40 x 3/16 pan hd.	1
-26	40182-2	. Screw - Cap.	1
	---***---		
-27	39972G3	. Body Complete - Camera (Figure 2-3)	1

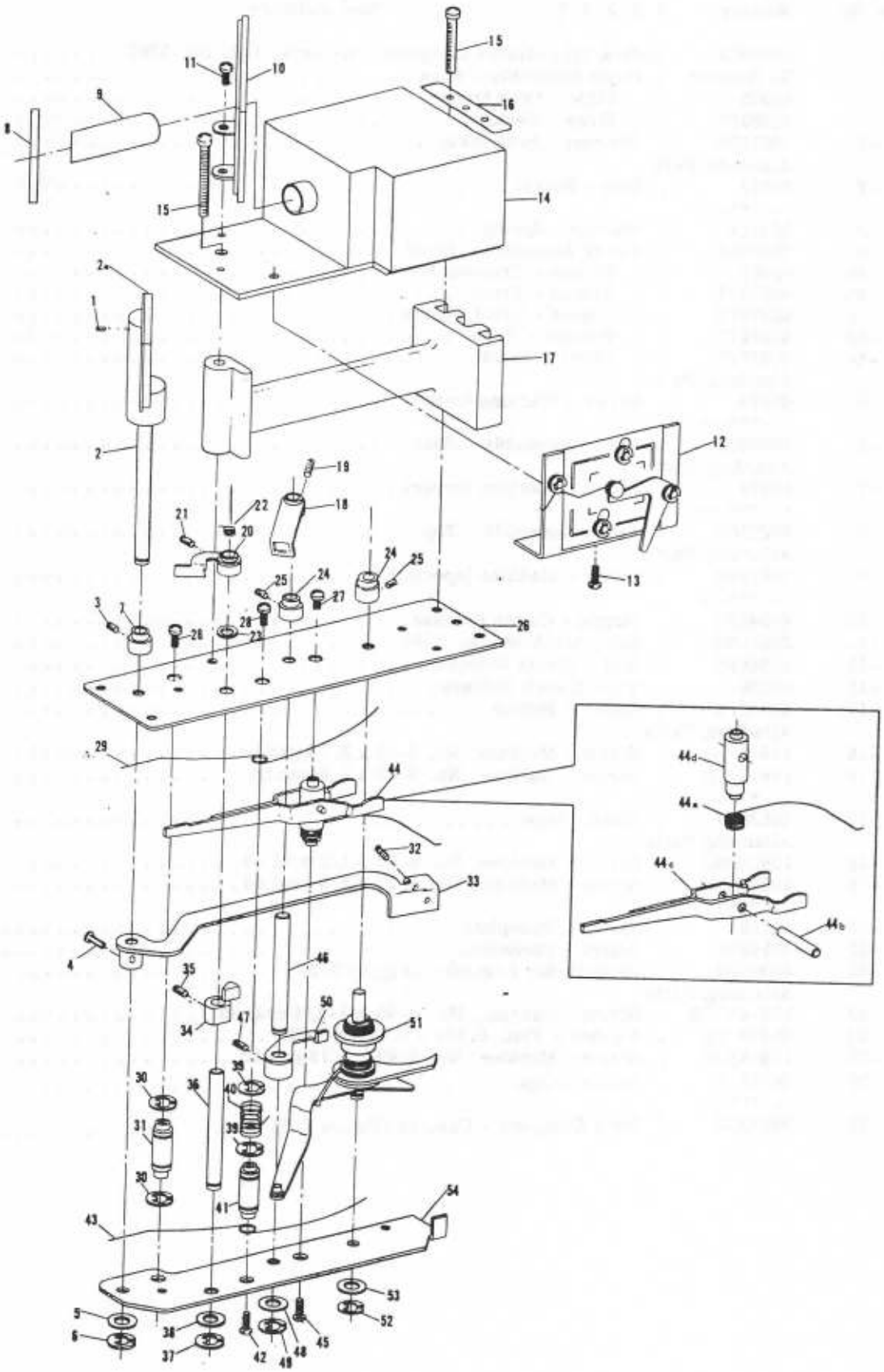


Figure 2-2. RANGEFINDER ASSEMBLY

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
2-	40080G2		Rangefinder Assembly	Ref.
-1	170A2-4L	.	Screw - Set, No. 2-58 x 1/4 oval point	1
-2	40037G1	.	Mount Assembly - Mirror	1
-2a	40037G2	. .	Mirror Assembly	1
	Attaching Parts			
-3	170-2-2L	.	Screw - Set, No. 2-56 x 1/8 cup point	1
-4	40182-1	.	Screw - Cap	2
-5	30473-20	.	Washer - Flat, 0.203 x 0.124 x 0.010	1
-6	251-7	.	Ring - Retaining	1
	---***---			
-7	40013P1	.	Hub - Mirror Arm	1
-8	40083	.	Guide - Light Shield	2
-9	40084P1	.	Shield - Light	1
-10	40049G1	.	Mirror Assembly - Framing	1
	Attaching Part			
-11	116-3-3B	.	Screw - Machine, No. 3-48 x 3/16 pan hd	2
	---***---			
-12	40052G1	.	Mask Complete - Framing (Figure 2-6)	1
	Attaching Part			
-13	40020	.	Screw - Machine (special)	1
	---***---			
-14	40044G1	.	Plate Assembly - Prism	1
	Attaching Part			
-15	40093	.	Screw - Machine (prism plate)	2
	---***---			
-16	40178-2	.	Plate - Retainer	1
-17	40055P1	.	Spacer - Prism	1
-18	40019G1	.	Lever Assembly - Framing	1
	Attaching Part			
-19	170A2-4L	.	Screw - Set, No. 2-58 x 1/4 oval point	1
	---***---			
-20	40067G1	.	Latch Assembly - Clutch Release	1
	Attaching Part			
-21	170-2-2L	.	Screw - Set, No. 2-56 x 1/8 cup point	1
	---***---			
-22	40177	.	Spring - Interlock Return	1
-23	38473-1	.	Washer - Flat, 0.250 x 0.128 x 0.010	1
-24	40013P1	.	Hub - Mirror Arm	2
	Attaching Part			
-25	170-2-2L	.	Screw - Set, No. 2-56 x 1/8 cup point	2
	---***---			
-26	40030P1	.	Plate - Upper	1
	Attaching Parts			
-27	116-3-2B	.	Screw - Machine, No. 3-48 x 1/8 pan hd	1
-28	116-3-3B	.	Screw - Machine, No. 3-48 x 3/16 pan hd	2
	---***---			
-29	40033	.	Spring - Mirror Pivot	1
-30	253-5	.	Ring - Retaining	2
-31	40024P1	.	Spacer - Rangefinder	1
-32	170A2-5L	.	Screw - Set, No. 2-56 x 5/16 oval point	1
-33	40011G1	.	Arm Assembly - Mirror	1
-34	40090	.	Lever - Infinity Stop	1
	Attaching Part			
-35	170-2-2L	.	Screw - Set, No. 2-56 x 1/8 cup point	1
	---***---			
-36	40014P3	.	Pivot - Latch	1
	Attaching Parts			
-37	251-7	.	Ring - Retaining	1
-38	38473-1	.	Washer - Flat, 0.250 x 0.128 x 0.010	1
	---***---			
-39	253-5	.	Ring - Retaining	2
-40	40032P1	.	Spring - Clutch Lever	1
-41	40024P1	.	Spacer - Rangefinder	1

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
2-	Attaching Part			
-42	116-3-3B	.	Screw - Machine, No. 3-48 x 3/16 pan hd	1
	---***---			
-43	40033	.	Spring - Mirror Pivot	1
-44	40029G1	.	Post Assembly - Clutch Lever	1
-44a	40040	. .	Spring - Mirror Arm	1
-44b	30685-24	. .	Pin - Dowel	1
-44c	40027G1	. .	Lever Assembly - Clutch	1
-44d	40025P1	. .	Post - Clutch Lever	1
	Attaching Part			
-45	116-3-3B	.	Screw - Machine, No. 3-48 x 3/16 pan hd	1
	---***---			
-46	40014P2	.	Pivot - Framing Lever	1
	Attaching Parts			
-47	170-2-2L	.	Screw - Set, No. 2-56 x 1/8 cup point	1
-48	251-7	.	Ring - Retaining	1
-49	38473-1	.	Washer - Flat, 0.250 x 0.128 x 0.010	1
	---***---			
-50	40017G1	.	Follower Assembly - Mirror Arm	1
-51	40015G1	.	Shaft Assembly - Clutch	1
	Attaching Parts			
-52	251-7	.	Ring - Retaining	1
-53	30473-20	.	Washer - Flat, 0.203 x 0.124 x 0.010	2
	---***---			
-54	40026P1	.	Plate - Lower	1

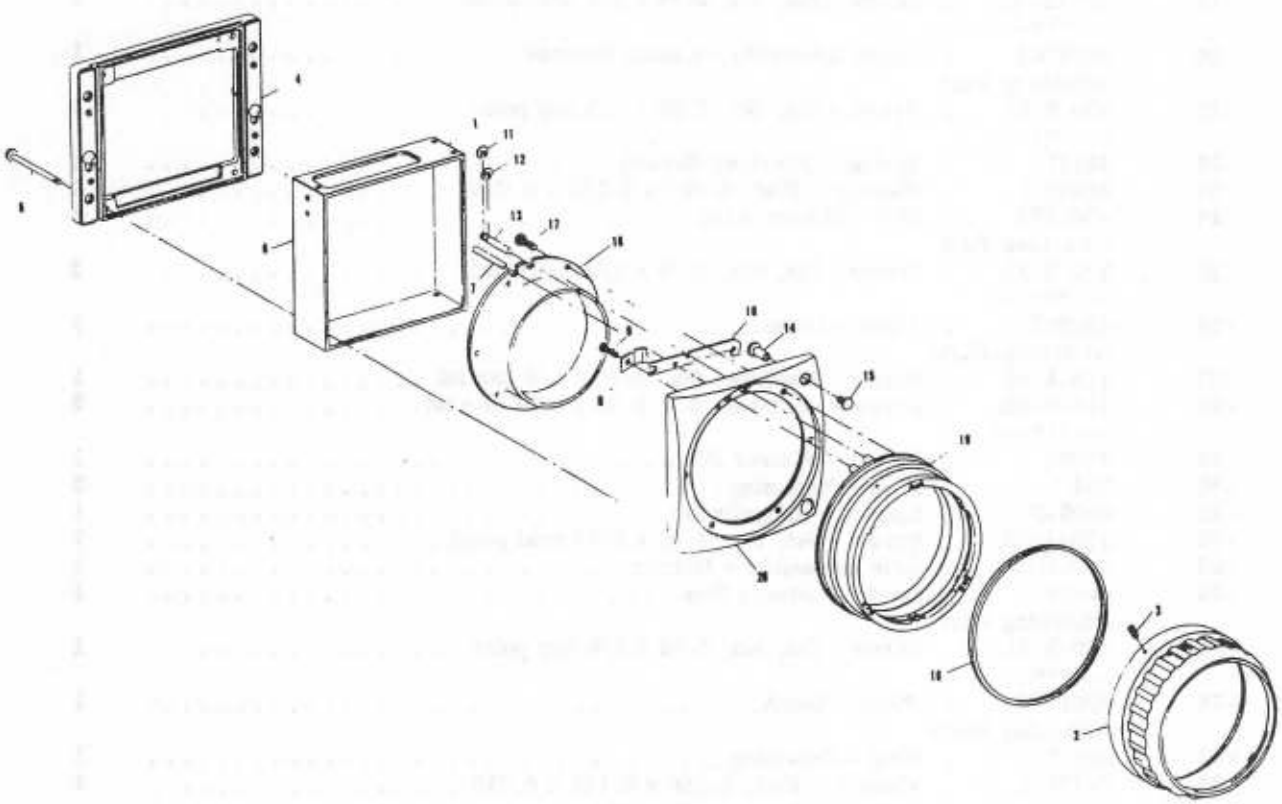


Figure 2-3. CAMERA BODY COMPLETE (RANGEFINDER MODEL)

Figure and Index No.		Part Number	1 2 3 4 5 Nomenclature	Qty.
3-		39972G3	Body Complete - Camera, Rangefinder Model	Ref.
-1		40031P1	. Gasket - Body	1
-2		39933P2	. Ring - Focusing	1
		Attaching Part		
-3		39957	. Screw - Machine (focusing ring)	3
		---***---		
-4		39903G1	. Plate Assembly - Mounting (Figure 2-7)	1
		Attaching Part		
-5		39950	. Screw - Machine (special)	4
		---***---		
-6		39930P1	. Body - Camera	1
-7		40089	. Pin - Infinity Stop	1
-8	*	39969	. Spring - Lens Release Arm	1
		Attaching Part		
-9		116-4R3B	. Screw - Machine, No. 4-40 x 3/16 pan hd	1
		---***---		
-10		39954P1	. Arm - Lens Release	1
		Attaching Part		
-11		251H15	. Ring - Retaining	1
		---***---		
-12		251H15	. Ring - Retaining	1
-13		39955	. Pin - Lens Release	1
-14		39953	. Plunger - Lens Release	1
		Attaching Part		
-15		39952	. Button - Lens Release	1
		---***---		
-16		39942P1	. Baffle - Light	1
		Attaching Part		
-17		116-4R3B	. Screw - Machine, No. 4-40 x 3/16 pan hd	6
		---***---		
-18		39964	. Seal - Focusing Ring	1
-19		39937G1	. Sleeve Complete - Lens Barrel (Figure 2-8)	1
-20		39970G1	. Support Assembly - Lens Barrel	1
		39626P2	. . Medallion	1

* Earlier models used two of these springs, but only one should be used for replacement on all models.

xl CAMERA BODY

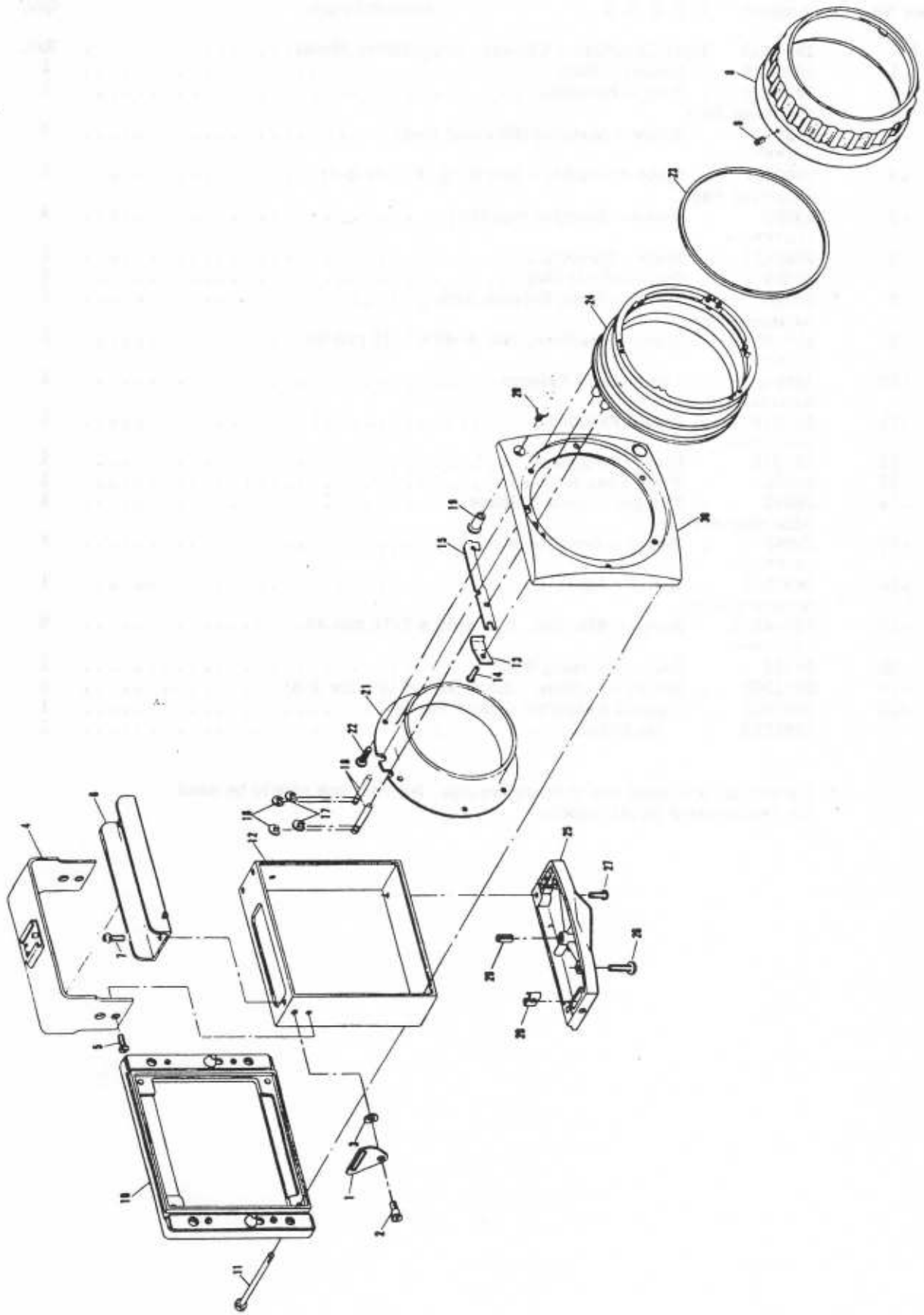


Figure 2-4. CAMERA BODY COMPLETE (MODEL xl SPECIAL)

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
4-	39972G1		Body Complete - Camera, (Model xl Special) Cat. No. 7302	Ref.
	No Number	.	Strap Assembly - Neck	Ref.
	40070	. .	Slide - Neck Strap	2
	40069P1	. .	Strap - Neck	1
-1	40071P1	.	Bracket - Neck Strap.	2
	Attaching Part			
-2	40072	.	Stud - Swivel	2
	---***---			
-3	224S14	.	Washer - Spring	2
-4	40098G1	.	Cover Assembly - Top.	1
	Attaching Part			
-5	39911P1	.	Screw - Machine (special)	2
	---***---			
-6	40086G1	.	Spacer Assembly - Top Cover.	1
	40087P1	. .	Nameplate - Front.	1
	40088P1	. .	Nameplate - Rear	1
	Attaching Part			
-7	116-4R2B	.	Screw - Machine, No. 4-40 x 1/8 pan hd.	2
	---***---			
-8	39933P2	.	Ring - Focusing	1
	Attaching Part			
-9	39957	.	Screw - Machine (focusing ring)	3
	---***---			
-10	39903G1	.	Plate Assembly - Mounting (Figure 2-7)	1
	Attaching Part			
-11	39950	.	Screw - Machine (special)	4
	---***---			
-12	39930P1	.	Body - Camera.	1
	Attaching Part			
-13	106C6R6J	.	Screw - Machine, No. 6-32 x 3/8 oval hd	2
	---***---			
-14 *	39969	.	Spring - Lens Release Arm	1
	Attaching Part			
-15	116-4R3B	.	Screw - Machine, No. 4-40 x 3/16 pan hd.	1
	---***---			
-16	39954P1	.	Arm - Lens Release	1
	Attaching Part			
-17	251H15	.	Ring - Retaining	2
	---***---			
-18	251H15	.	Ring - Retaining	2
-19	39955	.	Pin - Lens Release	2
-20	39953	.	Plunger - Lens Release	1
	Attaching Part			
-21	39952	.	Button - Lens Release	1
	---***---			
-22	39942P1	.	Baffle - Light.	1
	Attaching Part			
-23	116-4R3B	.	Screw - Machine, No. 4-40 x 3/16 pan hd	6
	---***---			
-24	39964	.	Seal - Focusing Ring	1
-25	39937G1	.	Sleeve Complete - Lens Barrel (Figure 2-8)	1
-26	40138P1	.	Plate - Base	1
	Attaching Part			
-27	106C6R8J	.	Screw - Machine, No. 6-32 x 1/2 oval hd	2
	---***---			
-28	40162	.	Spring - Baseplate	2
-29	40149P1	.	Insert - Threaded	1
-30	39970G1	.	Support Assembly - Lens Barrel	1
	39626P2	. .	Medallion.	1

* Earlier models used two of these springs, but only one should be used for replacement on all models.

xl CAMERA BODY

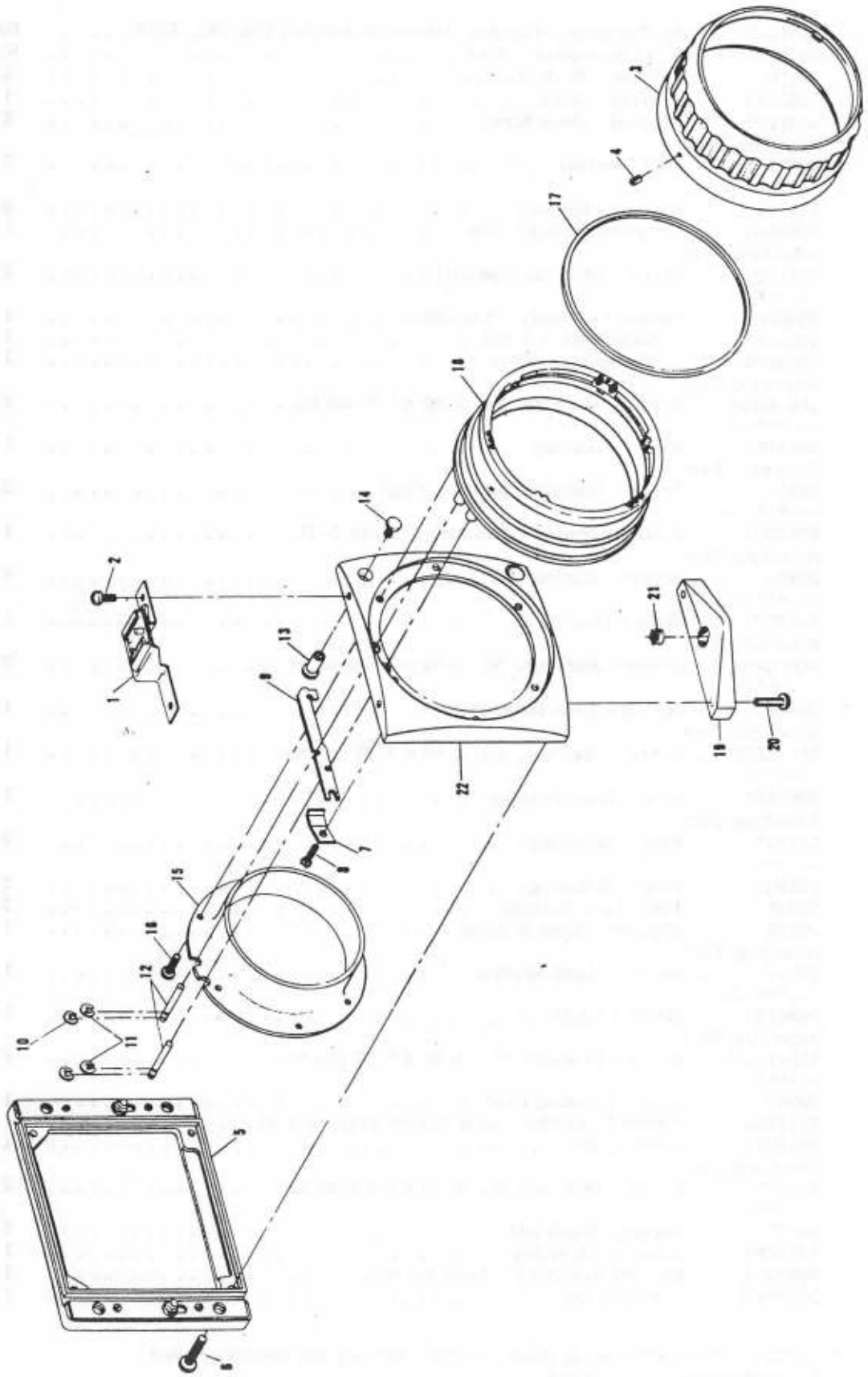


Figure 2-5. CAMERA BODY COMPLETE (MODEL xlw)

Figure and Index No.		Part Number	1 2 3 4 5	Nomenclature	Qty.
5-		39972G2		Body Complete - Camera, Model xlw, Cat. No. 7301	Ref.
		No Number	.	Strap Assembly - Neck	Ref.
		40070	. .	Slide - Neck Strap	2
		40069P1	. .	Strap - Neck	1
-1		40100G1	.	Bracket Assembly - Shoe	1
		Attaching Part			
-2		116-6R5B	.	Screw - Machine, No. 6-32 x 5/16 pan hd	2
		---***---			
-3		39933P2	.	Ring - Focusing	1
		Attaching Part			
-4		39957	.	Screw - Machine (focusing ring)	3
		---***---			
-5		39903G2	.	Plate Assembly - Mounting (Figure 2-7)	1
		Attaching Part			
-6		39958	.	Screw - Machine (special)	4
		---***---			
-7	*	39969	.	Spring - Lens Release Arm	1
		Attaching Part			
-8		116-4R3B	.	Screw - Machine, No. 4-40 x 3/16 pan hd	1
		---***---			
-9		39954P1	.	Arm - Lens Release	1
		Attaching Part			
-10		251H15	.	Ring - Retaining	2
		---***---			
-11		251H15	.	Ring - Retaining	2
-12		39955	.	Pin - Lens Release	2
-13		39953	.	Plunger - Lens Release	1
		Attaching Part			
-14		39952	.	Button - Lens Release	1
		---***---			
-15		39942P1	.	Baffle - Light	1
		Attaching Part			
-16		116-4R3B	.	Screw - Machine, No. 4-40 x 3/16 pan hd	6
		---***---			
-17		39964	.	Seal - Focusing Ring	1
-18		39937G1	.	Sleeve Complete - Lens Barrel (Figure 2-8)	1
-19		40139P1	.	Plate - Base	1
		Attaching Part			
-20		106C6R8J	.	Screw - Machine, No. 6-32 x 1/2 oval hd	2
		---***---			
-21		40149P1	.	Insert - Threaded	1
-22		39970G2	.	Support Assembly - Lens Barrel	1
		39626P2	. .	Medallion	1

* Earlier models used two of these springs, but only one should be used for replacement on all models.

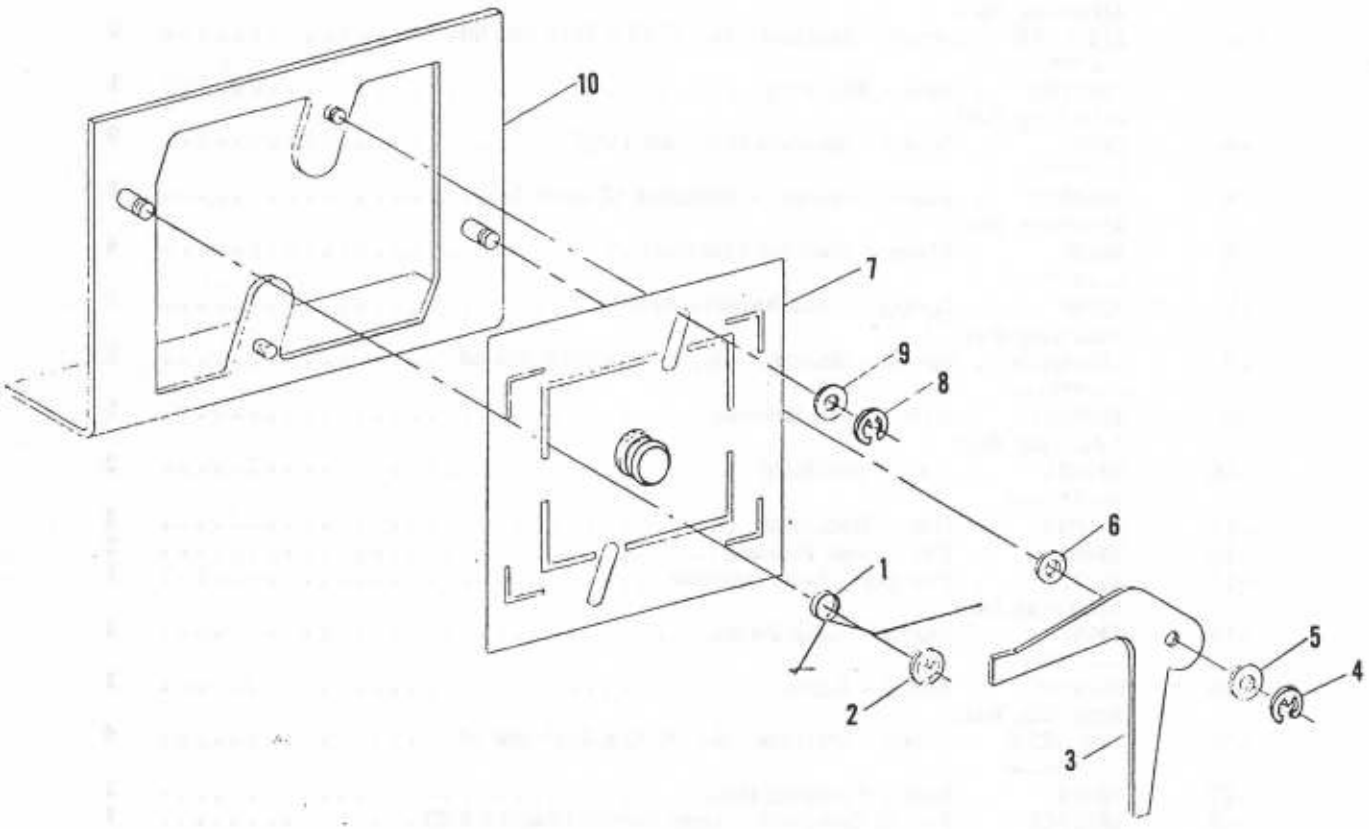


Figure 2-6. FRAMING MASK COMPLETE

Figure and Index No.	Part Number	1 2 3 4 5 Nomenclature	Qty.
6-	40052G1	Mask Complete - Framing	Ref.
-1	40058P1	. Spring - Mask	1
	Attaching Part		
-2	251-4	. Ring - Retaining	1
	---***---		
-3	40056P1	. Crank - Framing	1
	Attaching Parts		
-4	251-4	. Ring - Retaining	1
-5	38473-2	. Washer - Flat, 0.140 x 0.064 x 0.010	2
	---***---		
-6	38500-6	. Washer - Flat, 0.109 x 0.064 x 0.022	1
-7	40052G3	. Mask Assembly	1
	Attaching Parts		
-8	251-4	. Ring - Retaining	2
-9	38473-2	. Washer - Flat, 0.140 x 0.064 x 0.010	2
	---***---		
-10	40052G2	. Bracket Assembly.	1

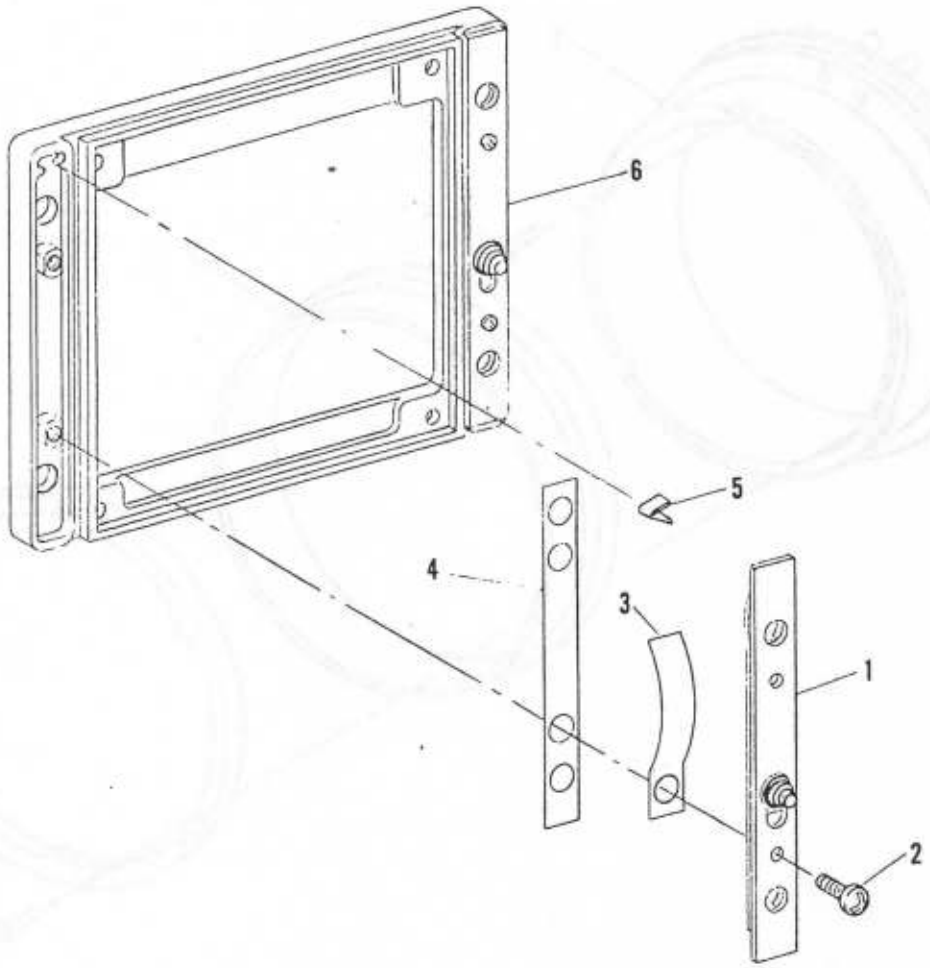


Figure 2-7. MOUNTING PLATE ASSEMBLY

Figure and Index No.	Part Number	1 2 3 4 5 Nomenclature	Qty.
7-	39903G1	Plate Assembly - Mounting (rangefinder and special camera bodies).	Ref.
	39903G2	Plate Assembly - Mounting (xlw camera body).	Ref.
-1	39904G1	. Lock Assembly - Back.	2
	Attaching Part		
-2	39911P1	. Screw - Machine (back lock assembly)	4
	---***---		
-3	39910P1	. Spring - Detent.	2
-4	39909P1	. Lining - Back Lock.	2
-5	39908	. Spring - Back Lock.	2
-6	39901P1	. Plate - Mounting (rangefinder and special camera bodies)	1
	39901P2	. Plate - Mounting (xlw camera body).	1

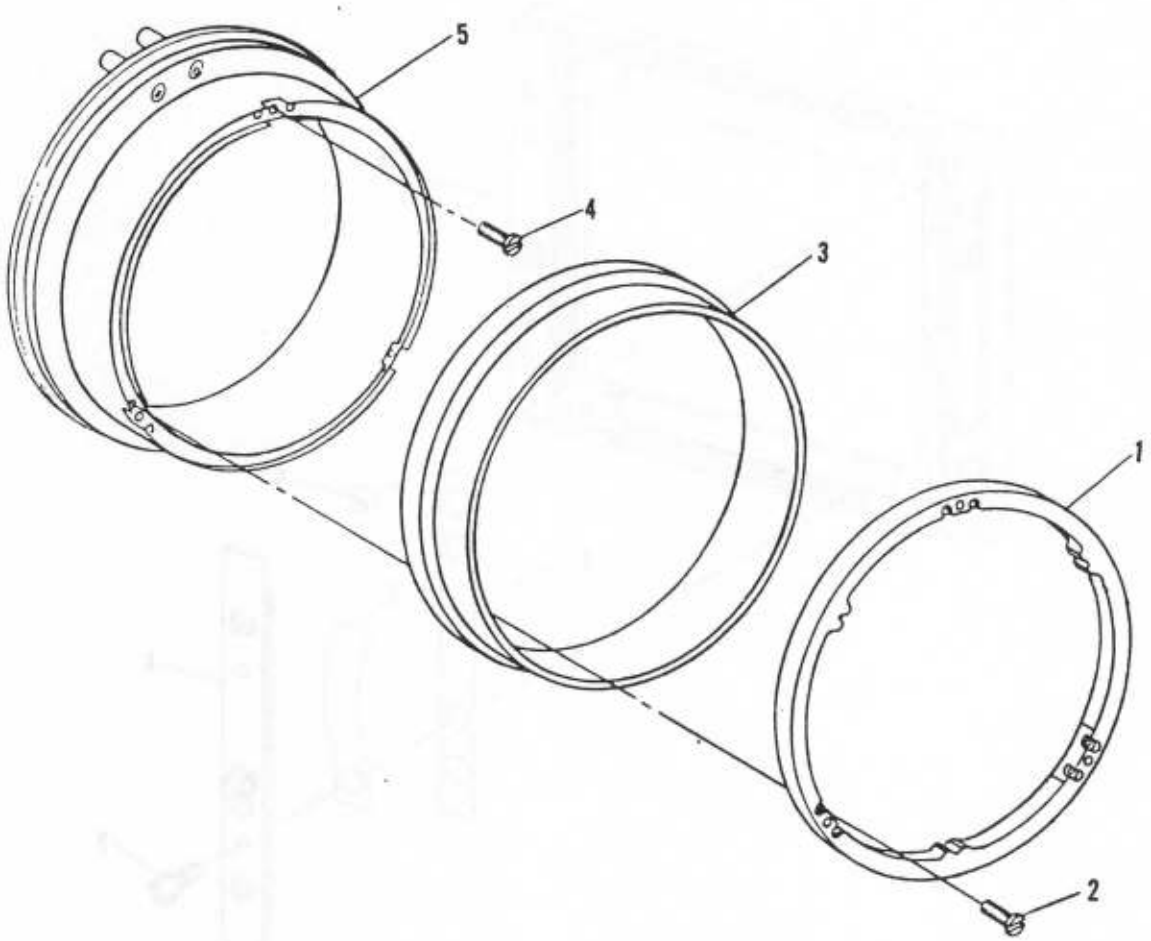


Figure 2-8. LENS BARREL SLEEVE COMPLETE

Figure and Index No.	Part Number	1 2 3 4 5 Nomenclature	Qty.
8-	39937G1	Sleeve Complete - Lens Barrel.	Ref.
-1	39934P1	. Guide - Lens Barrel	1
	Attaching Part		
-2	39938	. Screw - Machine (special)	6
	---***---		
-3	39940P1	. Bearing - Focusing Ring	1
-4	39938	. Screw - Machine (special)	3
-5	39937G2	. Sleeve Assembly - Lens Barrel	1

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